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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and to improve the character of the service rendered to the public.

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AMERICAN ASSOCIATION OF MASTERS AND PILOTS—ANNUAL CONVENTION.

The Grand Harbor of the American Association of Masters and Pilots of Steam Vessels convened in Washington, D. C., January 15, 1902. Forty-seven Harbors were represented with their full delegation and five Grand Harbor officers and one Past Grand Captain, Capt. W. S. Van Kensen, answered to call of the roll. The assembly was the largest in the history of the association, and the business transacted at this Grand Harbor voyage will result in great benefit to its members and those who are not as yet members will receive the same benefit. To the latter it is to be hoped that they will see the benefits to be derived from an organization of the licensed deck officer and affiliate with the different Harbors and give their aid and influence to secure legislation in their interests, as well as in the best interests of their employers for which this association labors diligently. The meeting was the longest in the history of the association, having lasted nine days with three night sessions. In previous Grand Harbor meetings the association has been able to get through the session in 6 days, but the large increase in new Harbors and membership in all Harbors during the past two years, has brought a large increase in business. There have been ten new Harbors established in the past two years and the membership has doubled and is rapidly increasing. Five applications for new Harbors are now in the hands of the grand officers for charters. The work of protection afforded members of the association by counsel during the past two years has been a very large factor in adding to the rolls of membership.

The by-laws of the Grand Harbor have been changed to admit to membership all pilots licensed by the different states, including the inland lakes of New York, thereby bringing in a large number of men who will be an honor to the association and add greatly to its influence to better the condition of the licensed deck officer.

The Grand Harbor endorsed H. R. Bills, No. 117, 9053, 8858, 8589. 8590, 5796. Bill 8582 was not endorsed. The Congressmen and Senators of Congress from the different districts were all seen in reference to the bills now before Congress for light-houses and light-boats on the coasts and bays; also for lights on the Mississippi and Ohio rivers.

The committee on steamboat inspection service waited on the Board of Supervising Inspectors and submitted their recommendations for changes in the rules of the Board of Supervising Inspectors. The Board promised to give them due consideration and notify the chairman of the committee, Capt. Luther B. Dow, of their action on the matter submitted.

The following named Grand Harbor officers were elected for the year 1902:

Capt. John C. Silva, Grand Captain; What-Cheer Harbor No. 13, Providence, R. I.

Capt. Charles Maytham, Grand First Pilot; Buffalo Harbor No. 41, Buffalo, N. Y.

Capt. N. L. Cullin, Grand Second Pilot; Enterprise Harbor No. 2, Camden, N. J.

Capt. Luther B. Dow, Grand Purser and Counsel; Excelsior Harbor No. 5, Brooklyn, N. Y.

Capt. Benj. F. Perkins, Grand Captain's Clerk; Jersey City Harbor No. 6, Jersey City, N. J.

A DEPARTMENT OF COMMERCE.

Senator Nelson's bill creating a Department of Commerce, which passed the Senate on Tuesday was amended in various particulars. Probably the most important of the amendments was one changing the title to read the Department of Commerce and Labor. It provides for a secretary, who is to be a member of the Cabinet, and assistant secretary, and also the other officials and clerks necessary.

The proposed department is especially charged with the collection and distribution of statistical information, and with the development and fostering of foreign and domestic commerce. In the department there is to be a new bureau of manufactures, and many bureaus now included in other departments are transferred to this new department, including the life-saving service, the light-house service, the marine hospital service, the steamboat inspection service, and the bureaus of navigation, of shipping and of immigration as well as the control of the fisheries and the Chinese exclusion questions, all now within the jurisdiction of the Treasury Department; the fish commission and the census bureau. The department also is given jurisdiction over the consular service so far as it pertains to commerce.

IRON ORE IN CANADA.

An important discovery of magnetic iron ore has been made in Canada about sixty miles north of the Atikokan range, and the land has been secured by Duluth and Minneapolis men, says an exchange. In some manner the news of the find has leaked out in Chicago to the surprise of the Duluth men interested, for the discovery has been for weeks a carefully guarded secret. A. R. Macfarlane, of Duluth, is prominent in the transaction, but is not inclined to discuss it very freely.

The iron ore discovery was made on the shores of a lake and the outcroppings have been traced for a distance of seven miles. The very shores of the lake are of iron ore laminate structure and running from sixty-seven to sixty-nine per cent magnetic iron. The discovery was made by a prospector named Frank Holmes, and since then other iron men in the interests of the Duluth men have been over the property for the purpose of making a careful examination.

There is every indication that the new iron ore find is regarded as one of much importance. It carries no titanium. Much of the magnetic ore found in Minnesota carry titanium, and that fact thus far has made them undersirable. The Duluth and Minneapolis capitalists who have obtained control of the newly discovered magnetic ores in Canada are rapidly acquiring lands, and altogether have 3,000 acres.

The ores have been submitted for analysis in Duluth, New York and other places. One by Professor Woolman showed 68.97 iron, and low in phosphorus and sulphur. Lerch Bros. reported 68.70 iron, and Ricketts & Banks, of New York, reported 27.03 nickel, in connection with iron and copper. This last report has rather startled Mr. Macfarlane and his associates. They were sure of much desirable iron, also of some nickel, but they did not figure on the copper.

Duluth, Minneapolis and Chicago men are much interested in the mineral resources of Canada north of Minnesota and there is a great amount of prospecting going on in that region.

THE ELECTRIC SMELTING & ALUMINUM CO., of Illinois, has begun proceedings to have Paul S. Reeves and S. K. Reeves, trading as Paul S. Reeves & Son, of Philadelphia, enjoined from making an alleged infringement of certain letters patent, relative to improvements in manganese bronze, an alloy of commerce. The Ajax Metal Co., Philadelphia, are headquarters for manganese bronze according to patents which they control and they hold the exclusive agency in the United States.

DETROIT RIVER RULES.

The lake division of the revenue cutter service will do all in its power to aid the Lake Carriers' Association in making rules for navigating Detroit river. It is of course questionable about enforcing any rules over the Limekiln Crossing in the lower part of the river, but an international agreement could be made whereby regulations could be put in force. It would have to go through the State Department at Washington and the department at Ottawa.

Capt. A. B. Davis, of the revenue cutter service, is taking considerable interest in the matter and suggests the following regulations for navigating the lower Detroit river. They are practically the same as the rules adopted by the Lake Carriers' Association at the annual meeting and referred to the legislative committee.

Rule 1.—No vessel shall, between the north end of Ballard Reef and the south point of Bois Blanc Island, in the Detroit river, Michigan, approach or pass another vessel moving in the same direction nearer than 500 feet, but the privilege is given vessels to pass other vessels moving in the same direction between the aforesaid points, provided the overtaking vessel passes the overtaken one out of the channel to the eastward of the red buoys and westward of the black buoys, and when thus passing the overtaking vessel must slacken her speed and pass the overtaken one at a safe distance.

Rule 2.—Steamers bound in opposite directions between the aforesaid points, shall slow to half speed until each has passed one another.

Without some official action the rules of course could not be put in force and a dispatch from Washington says that an effort will be made to pass the following act:

Section 1.—Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled: That the Secretary of the Treasury be, and he hereby is, authorized and directed to adopt and prescribe suitable rules and regulations governing the movements and anchorage of vessels and rafts in Detroit and St. Clair rivers, and for the purpose of enforcing the observance of such regulations the said Secretary is hereby authorized to detail one or more revenue cutters for duty on said rivers.

Section 2.—That in the event of the violation of any such rules and regulations of the Secretary of the Treasury, by the owners, masters, of person in charge of such vessel, such owners, masters, or person in charge shall be liable to a penalty of $100, in the discretion of the Secretary of the Treasury.

The insurance companies are anxiously watching for developments in the direction of recommendations made by the Lake Carriers' Association to induce the government to make appropriations for better regulations of the traffic on the lower Detroit river.

The insurance companies have had to bear the brunt of all the accidents from grounding or collision in the vicinity of Limekiln Crossings, and this during the past year alone, has run far into the thousands of dollars.

David Vance and C. W. Elphicke, both of Chicago, and both representing large insurance interests, were on the special auxiliary committee appointed by the Lake Carriers to draft recommendations as to the proper manner to avoid a recurrence of the accidents on the lower Detroit river, and they urged the adoption of a new set of rules, forbidding one vessel passing another going in the same direction unless they went outside the stakes. They also were the ones back of the plan to have the government establish a revenue cutter service to see that any new regulations as well as the old ones, were observed by vessel masters.

The turbine yacht which the Hon. C. Parsons is building for Mr. A. L. Barber, will be about 1,400 tons burden. Her length is designed to be 260 feet 8 inches, and her maximum breadth 33 feet 3 inches. A comparison of the fuel consumption of the turbine steamer King Edward and the paddle-wheeler Duchess, of Hamilton, both of the same class, made by the same builders and plying on the Clyde, shows that the turbine boat does not suffer when one considers her higher speed. The figures for the season show that the King Edward burned 1,429 tons of 16 cwt. of coal and covered a total mileage of 12,116, meaning 8.47 miles per ton of coal used, and an average speed of 18½ miles per hour. The Duchess, of Hamilton consumed 1,758 tons 13 cwt. of coal, covered 15,604 miles, being 8.87 miles per ton, an average speed of 16½ miles per hour.

AROUND THE LAKES

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record:

The large tow barge John Smeaton, of the Pittsburg Steamship Co.'s fleet, which went ashore on Lake Superior last fall, it in dry-dock at West Superior. The bottom of the vessel is ripped from stem to forty feet from the stern post. The repair bill will be very large, and it is one of the biggest jobs ever done on the lakes. When the Smeaton went on the rocks 170 of her plates were damaged, as well as a large number of frames. Many of the damaged plates can be re-rolled and put back.

Speaking of big bonuses for ore lands, the subject being brought up on account of the report concerning section 30, a Duluth man who is interested in iron lands said: "While $3,000,000 would be a record breaker, it is possible that the rumor has considerable foundation. Of course, it is all mere guess work, but I venture to say that there are mines in Northern Minnesota to-day for which a bonus of $3,000,000 could be had. The mine I have in mind in this connection is the Stephenson, under lease to Corrigan, McKinney & Co."

Lumber is being shipped out of Ashland by rail in large quantities. The car shortage is not felt as bad as it was a few weeks ago, and shippers are all busy getting their sales off their hands. The Sterns Lumber Co., which is logging on the Bad River Reservation, never in its history experienced a better winter for logging, according to the statements of the United States Sealer O'Neil. The company intends getting out about 30,000,000 feet of logs this winter, and in order to do this are working like beavers. It has eight camps in operation, five large and three small ones.

The boom in the price of lumber, which has been on for several years, has apparently reached a climax in the Duluth market. The prices have attained a plane where the Canadian product, regardless of the $2 tariff comes in competition with Duluth lumber in the eastern markets. Few important sales have been made in this market for some time, but two lumber concerns in the United States alone have bought an aggregate of 240,000,000 feet of Canadian lumber recently. A Saginaw firm has bought 140,000,000 feet of Canadian lumber for delivery there, and a Boston firm has bought 100,000,000 feet for delivery at Tonawanda. These two purchases are equal to one-half the entire cut of the Duluth-Superior mills for a season.

A purchase has been made by the Northwestern Railway Co. of 700 feet of dock frontage on the Superior bay front. This dock is one of the best locations along the dock line. It is at the base of Connor's Point, and near the location of the dock of the Northwestern Fuel Co., which is now being built. Just what the railroad company intends to do with the property is not known, as the officials will say nothing regarding their intentions. It is thought that it is their intention to improve the property at once, for the reason that the road has an outlet to the bay at that point, and has a spur track already built there. A move is on foot to build a city dock at the base of Connor's Point, at the end of Fifth street. At the present time there is no public wharf and it is believed that if there be one constructed, it will greatly facilitate the trade between Superior and the north and south shores. A committee will be appointed by the mayor to look into the matter and to purchase land for the site of the dock.

One of the largest deals in mining property in many months is said to be under way now. The land is on the western end of the Mesaba range in section 32, township 57, range 22, and an enormous deposit has been shown up on it. Explorations have been under way for more than a year, and the amount of ore disclosed is said to be from 25,000,000 tons to 30,000,000 tons, running about 56 per cent. in iron and a large quantity of lower grade ore running from 56 per cent down to 50 per cent. It is mixed in character, some being of Bessemer quality and some being high in phosphorus, which puts it out of the Bessemer class. The lease of the property is owned by Messrs. O. D. Kinney, E. B. Hawkins, J. H. Pearce and George H. Crosby, of Duluth. The fee is owned by the Mississippi Lumber Co., which is owned by the Meyerhaeuser interests. The sum for which the lease is to be sold is reported to be $900,000, and the sale will cover only 160 acres, while the syndicate which is making the sale owns a considerable quantity more.

From almost every point on the lakes those who desire to invest in vessel property have asked for figures, and the only reason more contracts are not closed is the fact that the ship yards now have orders on hand for all the work they can do until far into the summer, and several contracts have been placed for vessels for delivery in the spring of 1903.

BUFFALO.

Special Correspondence to The Marine Record.

On Tuesday afternoon the last grain cargo to be unloaded this winter was finished at the Ontario elevator. It was discharged from the steamer Neilson.

The price paid to the underwriters for the Hopkins as she lies was $8,500. The amount of insurance money paid over to O. W. Blodgett, of Bay City, after his abandonment of the craft had been accepted was $36,000.

The wreck of the burned steamer Hennepin was sold here at auction by the underwriters this week. The Hennepin was burned during the dock fire here last summer. The underwriters paid the loss and took over what was left.

The new Merchants' Exchange Committee on harbor and canal, is composed of the following: Capt. James J. H. Brown, Edwin T. Evans, Gibson L. Douglass, Marcus M. Drake, Rendennes White, George A. Ricker, George Clinton, Robert R. Hefford, Harris Fosbinder, William C. Farrington and James Ash.

According to the action in Congress this week we are in a fair way to have a marine hospital built at this port. Representative Ryan has done noble work at the instigation of Representative Alexander, but Chairman Hepburn is strongly opposed to the $125,000 necessary and moved that the amount be cut down to $40,000, a sum entirely inadequate for the work.

During the year ending June 30, 1901, the United States Government expended for maintenance and improving the outer harbor the sum of $382,184, and there was a balance on July 1, 1901, of the unexpended appropriation of $760,390 for further use and for the completion of the contracts now pending and the amount of uncompleted contracts figuring $919,528.

According to a table arranged by Major Thomas W. Symons, United States Engineer Corps, the level of Lake Erie at Buffalo has been falling off for the last four years. The fall was gradual until 1900, when it became greater than in preceding years. Maj. Symons has taken observations at the south pier of the United States light-house slip. Among other things, he has found that the lowest water in the period of navigation occurs in the spring and fall when the harbor is busiest. Maj. Symons says the highest water reached in four years was on November 21, 1900, when the automatic guage showed plus 6.4 feet. The lowest water was on December 4, 1898, and on March 14, 1901, when minus 4.4 feet was reached. That is reckoning with the mean level of Lake Erie, 572.86 feet above mean tide at New York.

Bad as the present weather is for travel and for business there is satisfaction in the fact that it comes as no surprise. Ample warning has been given of the approach of the storm by the local weather office and the storm justifies the promises, unpleasant as the voice of Forecaster Cuthbertson. The marked success attending the heavy snow warning spread broadcast by the Weather Bureau, at least twenty-four hours in advance of the storm, is worthy the highest praise. A marked public service has again been rendered by this important bureau. Railroads have all been hampered somewhat; but what would have been the annoyance to the traveling public and the exposure of perishable goods in delays of transit it is hard to estimate. In goods the bureau pays for itself many times over in every year.—Buffalo Evening News.

Representatives of various steamboat lines banded together in an organization known as the Great Lakes and St. Lawrence River Rate Committee, met at the Niagara Hotel on Saturday, to discuss the rate situation and to take up the question of abolishing commissions on the lines. Representatives of all the leading steamboat lines on northern waters were on hand, and two sessions were held. After the meeting George C. Wells, secretary of the committee, said the question of commissions had been discussed, but no definite action was taken. "Most of the time," said he, "was spent in arranging the rate schedule for the coming summer. It is about the same as that for 1901, there being very few changes." W. J. Brown, general manager of the Windsor, Detroit & Soo Line, was elected chairman of the committee for this year. He is empowered to call a general meeting at any time.

The annual meeting of the Inland Lloyds, which was postponed at the Detroit meeting, where it was to be held as usual at the same time as the Lake Carriers' Association annual meeting, is still hanging fire. It is to be held in Buffalo, but no time has been fixed for it. The underwriters say that they have not time yet to give to it, as they are hard at work as ever taking care of the losses of last season. The situation would seem to call for an advance of rates, but the agents do not see their way to making much advance, if any, as there is too much disposition to carry one's own insurance. One of them says that he does not look for any change. It is certain that no reduction can be made and it may not be safe to put the rates up. From the same source it is reported that the steamer Curry, in dry-dock at Chicago, is expected to cost the companies about $5,000. She went on Hurson's Island in Detroit river last fall.

Insurance agents are making another effort to fix up the fire loss on the steamer Wetmore and tow, which were left in such bad shape on Georgian Bay last fall. James T. Hurd, one of the lumbermen interested in the cargo of the barge King, has gone to the boats, accompanied by a member of the insurance office of Smith & Wilcox, to make a bid on the entire lot of lumber. It is mostly in shape to sell, as the cargo of the steamer and the consort King are ashore—what was left of it by the fire, which is thought to be about four-fifths of the whole. The cargo of the Brunette is all on board of her except about 100,000 feet that was taken to Bay City on a small steamer that was sent up from there to lighter her off. The trip to the boats, especially in winter, is a very hard one, as it is sixty miles beyond a railroad, and though there is a stage line the roads are in fearful condition at any time of the year. Tobermorey Harbor is a mere hamlet of a dozen houses, with two sawmills.

PORT HURON.

Special Correspondence to The Marine Record:

W. W. Stewart, United States inspector of hulls, has been granted a month's leave of absence and with Mrs. Stewart will leave in two weeks for a trip south.

Robert Thompson, who recently purchased the tug Clark of Thomas Fish, will place a new boiler in her and make other repairs. The boat will be taken to the "Soo" in the spring.

The Wolverine dry-dock was damaged by fire to the amount of $600 or $700 last week. The fire started in the engine room in the northeast corner of the dock. The department turned out and succeeded in preventing the spread of the flames. The steamer Mary Groh was in the dry-dock at the time.

Capt. Robert P. Thompson is now hard at work forming his new wrecking company. He will have a first class fitout at the "Soo" and no doubt before the season is over he will have one at this port. There is not very much doing in the way of repairs and fitting out just now, but before February 1 there will be lots of work on the vessels laid up here.

George M. Loud, who spent last week in Port Huron attending the case of the H. M. Loud Lumber Co. in the Circuit Court, returned home at noon on Saturday. He was of the opinion that the case of Hoffman vs. Loud would be decided in favor of Mr. Hoffman and was probably agreeably surprised when his attorneys notified him by telegraph that the lumber company had won the suit.

The following Port Huron engineers have been engaged by the steel trust for the coming season: Steamer Elwood—George C. Lawrence, chief; Coralia—Alex McKenzie, chief, A. W. Carlisle, second; Ericsson—Ansel P. Williams, chief; Joliet, George Lynn, chief; Lynn—Albert J. Armson, second; Maritana—Thomas McKenzie, second; Malietoa—T. Treleaven, chief; Neilson—A. P. Williams, chief; Watt—Arthur W. Armson, chief, A. P. Smith, second. W. H. Roach will act as second engineer on the steamer Colby.

Rev. W. F. Jerome, of Algonac, and former president of the village, was a Port Huron visitor on Friday afternoon. He told The Times that a reception was tendered to him on Thursday evening by seventy sailors and their families. He was the recipient of $250. Continuing Mr. Jerome said: "Why, my friend John M. Robertson also came over and took supper with us. The row in the Common Council in our town is still on, but is tied up tighter than beeswax in the Supreme Court. It may take a year to settle the difficulties. While I was in the council some people thought that I was to blame for about everything that took place, but I notice that there is just about as much trouble since I got out as there was while I was in the council."

The remodeled steamer Omar D. Conger, which was burned to the hull nearly a year ago, has been fitted up particularly for excursions and to accommodate large crowds. The Conger will have a capacity of carrying 1,000 passengers. On the first deck of the boat is located the ladies' and gentlemen's separate sitting and toilet rooms. A large stairway leads to the second deck. The cabin on the second deck is a commodious one, being 35 by 24 feet in size. Steam steering gear will be used on the boat. D. J. Stephenson, who has the contract for the electrical work, is finishing up that part of the work. The decks will be handsomely illuminated. George Carter will be captain of the steamer and R. Campbell engineer. The work is being rushed and it is expected the boat will make her trial trip at the beginning of next week.

The Polson Iron and Ship Building Works, Toronto, have contracted to build for J. Poupore, a Montreal contractor, what will be the largest shipped dredge in the world, the cost of which will be $62,000. The dredge, which is to be delivered on June 1 next, will have a dipper so big that it will bring up eight cubic yards, or thirteen tons, of material every time it is sent down into the deep. The capacity of the dredge will be sixty loads an hour, which for a day's work of ten hours, means 15,600,000 pounds. The draft, which will do this tremendous amount of lifting will be 96 feet long, with a beam of 36 feet 8 inches, and a mean depth of 10 feet 6 inches. The dredge will carry a crew of 12 easily. The consulting engineer in its construction is L. A. Desy, of Montreal. The dredge will do its gigantic feats of dipping first in connection with the great works which Mr. Poupore, the purchaser, is constructing for the government at Maisonneuve and Sorel.

CHICAGO.

Special Correspondence to The Marine Record:

There is nothing doing here in grain chartering nor is there any immediate prospect of any briskness in that direction.

The steamer Hennepin was sold at Buffalo, on Wednesday, to Capt. Davis, of David Vance & Co., of Milwaukee, for $18,100. The Hennepin was damaged by fire last season, and the underwriters only made a settlement on her last week.

The steamer J. D. Marshall has been sold by J. C. Pereue, of South Haven, to a syndicate of vesselmen headed by A. C. Wanwig, of Chicago, for $25,000. The Marshall was built in 1891, measures 428 tons, is 154 feet keel by 33 feet beam. The steamer will continue in the general lumber trade.

The steamer P. J Ralph and consort Harold have been sold by Charles Beyschlag, of St. Clair, Mich., to a syndicate of Chicago vesselmen, which is now being organized in Indiana, to be known as the Calbick Transportation Co. The company will be capitalized at $75,000 and will be managed by Capt. J. A. Calbick, of this city. The tow si one of the best of the fleet engaged in the lumber trade.

William W. Watterson, superintendent of the Shipowners' Drydock Co., was in Justice Hall's court on Tuesday charged with violation of the state labor laws in importing workmen to take the place of strikers without stating that a strike was in progress. The case was continued until Thursday morning. The complainants are the Ship Carpenters and Caulkers' Union and Martin Olson, who alleges he was brought here from Racine, Wis., under false pretenses.

It is now deemed certain that when the Lumber Carriers' Association fixes its minimum rates they will be about the same as those prevailing during the closing months last season. It is said that these rates are acceptable to the big lumber firms, provided the association can give guarantees that no one else will get lower rates. Instead of fighting the association's plans, the big lumber companies have rather welcomed the movement to secure uniform rates to all engaged in the trade.

"Cranes" is the title of a large and artistically prepared catalogue, issued by Pawling & Harnischfeger, Milwaukee, Wis. It contains 132 pages, about 8x11 inches in size, and fairly abounds in splendid illustrations, showing the very extensive lines of electric traveling cranes manufactured by this firm. They devote their entire time and ability to this one line of work, and how successfully is unmistakably evidenced by this catalogue. It is in itself a guarantee of enterprise, ability and rapid growth.

The steamers Muskegon and Pere Marquette No. 3, which stranded at the entrance to Ludington harbor, will be repaired at Milwaukee. The Muskegon is already at that port, and the Pere Marquette No. 3 will be taken there as soon as temporary repairs are made on her. Both steamers are badly damaged, and the last named ship may be turned over to the underwriters as a total constructive loss. Until last fall the steamers of the Pere Marquette fleet were only insured against fire and collision.

The outlook in the lumber trade for the coming season is said to be better than for a number of seasons past. There is a good call for boats on season contracts from Green Bay, from the head of Lake Superior and from Georgian Bay ports. These contracts are on the basis of yielding a profit of from 15 to 20 per cent. on the value of good ships. Work in the formation of the Lumber Transit Co. is still under way and some progress is being made, but the trust is still far from the point of coming to a successful issue.

The largest lumber deal ever made on the Menominee and one of the largest ever made in the history of the lumber trade, was consummated at Marinette, Wis., last week. At a meeting of the representatives of the Wilbeck company and N. Ludington company, two corporations whose officers are about the same, 80,000,000 feet of white pine lumber was sold to the Edward Hines Lumber Co., of Chicago. The total consideration was over $1,500,000. The sale includes all the lumber, lath and shingles to be cut by three large saw mills during 1902, and a surplus to be sawed by another mill.

Delegates to the Lake Seaman's Conference held here this week, are as follows: Chicago—William Penje, George Hanson, Thomas A. Hanson, D. C. Hanson, George Robertson, William Roberts, C. E. Tracy, G. E. Keogh; Ashtabula—F. Benson; Cleveland—J. W. Crangle, Owen Smith, Frank Howard, V. A. Olander; Buffalo—John Murphy; Tonawanda—Thomas Lester; Milwaukee—H. Nelson, Joseph Lortie. The Buffalo is on record in favor of accepting deck hands to membership in the hope of eliminating an undesirable class from the business. Chicago and Milwaukee are in favor of organizing them separately.

Newspaper reports that the United States Steel Corporation is going into shipbuilding on the Great Lakes are generally discredited in marine circles. The American Ship Building Co., otherwise known as the shipyard trust, now owns nearly all the shipyards on the lakes and buys all of its material from the steel trust. There would be practically nothing to gain for the latter to enter shipbuilding against its best customer. The absorption of the shipyard trust by the steel corporation is considered far more likely, but the stockholders of the American Ship Building Co. have no reason to complain of the dividends they have received and a big premium would have to be paid to secure control. The company has paid 7 per cent. dividends on its preferred stock and has over $1,000,000 surplus in its treasury.

"Sailors' Snug Harbor," as a home for old and worn-out sailors on the lakes, now seems fully assured. Charles E. Kremer, Esq., the admiralty lawyer, who has worked unceasingly for the establishment of such a home, stated that a beautiful site for a snug harbor has been picked out by the promoters. The tract contains twenty acres, lying along the St. Clair river, and is an ideal spot for an old-time mariner to spend the declining years of his life. Mr. Kremer says that funds to purchase the land were in sight, and he had no thought of further difficulty on that score, as vesselmen had shown a spirit of marked liberality toward the project. It is not improbable that the Lake Carriers' Association, now representing nearly a million tons of vessel property on the Great Lakes, will undertake the maintenance of the home after its establishment.

Another turn has been given to the litigation between the Williams Transportation Co., of South Haven, and the owners of the Darius Cole, of Detroit, concerning the purchase and sale of the steamer Darius Cole. The former company has filed a bill in chancery in the Circuit Court of this county, alleging fraud on the part of the Cole's owners in making the sale; setting up the claim that the Detroit company is insolvent; asking to have the damages of the complainant company assessed by the court and set off against the notes and mortgage given to secure the purchase money of the boat, and that such notes and mortgages be canceled and surrendered to the complainant. Steps had been taken by the Cole company to foreclose the mortgage and to sell the steamer, the sale being advertised for Saturday next. The bill of complaint prayed for an injunction to restrain such sale and to prevent the negotiation of the said notes and mortgage. Such writ was allowed by the Circuit judge and has been issued and served on the representatives of the defendant company.

DETROIT.

Special Correspondence to The Marine Record:

Capt. James Davidson's plant at Bay City was damaged to the extent of $15,000 by fire Monday. Loss is covered by insurance.

Alex. McVittie, president and manager of the Detroit Ship Building Co., left here on Tuesday, with his family, for a trip to California, in search of health.

Capt. H. F. Loftus, who was on the steamer H. E. Packer, last season, will sail the steamer W. W. Brown, which will be launched at South Chicago, Saturday.

The schooner Sophia Minch has been bought from Connelly Bros., of Buffalo, by Capt. James Sheehan, of Detroit, for $10,000. The Minch is now at Algonac, being repaired, on account of the damages sustained in collision with the car ferry Lansdowne in October.

The following meteorological observations are furnished by the office of the U. S. Weather Bureau, Detroit, for the week ending Jan. 29. Prevailing wind directions for the week west; highest velocity 36 west at 3:02 p. m., 27th. Mean temperature for the week, 23 deg.; highest temperature 37 deg. on 26; lowest zero on 28th.

The ice blockade in the Lake St. Clair ship canal has lowered the water in Lake St. Clair about five feet and the water has receded from the shore for over half a mile. Farmers living along the shore are compelled to walk out half a mile for their supply of water. The water in Detroit river past the city is twenty-seven inches lower than normal.

The deal whereby the Great Lakes Towing Co. is to become the owner of the wreckers Favorite and Saginaw, is now practically closed and the papers by which the sale will be consummated will change hands within a few days. When it gets the Saginaw and Favorite the tug trust will have practical control of the wrecking business on the lakes, with the exception of the outfit of Capt. Jas. Reid, of Sarnia.

C. W. Kotcher, of the Kotcher Lumber Co., of Detroit, has bought the schooner Annie P. Grover from Capt. Slyfield, of Port Huron, and during the next season will place her in tow of the steamer Pauly, to take the place of Amaranth, which was lost off Kewadin Beach, above Port Huron, last September. The Annie P. Grover measures 137 feet keel and 26 feet beam, and has a carrying capacity of 375,000 feet of lumber.

The steamer Tempest has been sold by Martha F. Miller and Charles E. Kobel, of Marine City, to H. Leonard Wilton, William P. Quinlan and William Pingle, each receiving one-third for $10,000. The Tempest is a propeller 155 feet long and with a rating in Inland Lloyds. The barge Sunshine will be sold in a few days to Edward Lake, of Detroit, by Alvin Peters, of Toledo. Captain Louis Cary is now at Toledo looking over the boat for Lake.

After an illness that lasted several months, Capt. Edward T. Slackford, an old captain, passed away at his residence, No. 36 Calumet avenue, last Friday noon. Capt. Slackford was seventy-three years of age. While he has not sailed for a number of years, he was not considered in ill health until he was stricken with a stroke of paralysis, when he took to his bed. He appeared to have recovered from its effects when gangrene set in, and death then was only a matter of time. Captain Slackford was a Mason and a very estimable man in all relations of life. He leaves a widow but no children.

The steamer Kennebec and her sister ship Kahwana, which is building at the yard of the Jenks Ship Building Co., at Port Huron, have been tied up in the ore trade for the season. The boats are owned by F. B. Chesbrough, of Emerson, Mich., and they have been chartered by the Iroquois Furnace Co. They will trade between Escanaba and South Chicago, but the rate is not known here. The big steamers Mary Elphicke and William L. Brown, which are owned by C. W. Elphicke, of Chicago, and others, will probably be chartered by the Canada Atlantic Transit Co. The Brown was operated by that line last season.

General Manager E. T. Evans, of the Anchor Line, says that in addition to the new Buffalo passenger and freight steamer which will come out for the Anchor Line in the spring of 1903, another large package freight steamer of about 5,000 tons capacity will be built and ready to go into service by that time. Frank E. Kirby has been at work on the plans and Mr. Evans said that the freighter will be 380 feet keel measurement, 46 feet beam and 30 feet deep. She will be modern in every respect, equipped with the very best machinery for the quick and economical handling of package freight and will not replace any of the boats now operated by the Anchor Line, but will be an addition to the fleet.

Commander J. C. Wilson, U. S. N., inspector of the eleventh light-house district, has asked Congress to make an appropriation for a new tender to assist the Marigold in the Detroit district. He says if the present Congress makes the necessary appropriation the boat could be built and ready for service at the opening of navigation of the season of 1903. Commander Wilson says that he wants a boat about two-thirds as large as the Marigold, about 300 tons, and that it would be stationed at the Sugar Island depot in St. Mary's river. It could then take care of that upper district while the Marigold took charge of the remainder of the eleventh district. The Marigold has the largest Pintsch gas plant afloat in the world, but on account of the vast distance to be covered is inadequate to properly do the work.

Secretary A. L. Jones of Local No. 3, M. E. B. A., has returned from Washington where he went as a delegate to the national conference, representing Detroit lodge. While there he was honored by having been elected national treasurer of the association. Mr. Jones said that the conference at Washington killed the idea of affiliating with the Longshoremen's Association, and that there will probably be no further consideration given the subject. Speaking of the possibilities of trouble between the Marine Engineers and owners next spring, Mr. Jones said that there would be none; that a scale very little different from that of last year had been adopted by the lake men, and that if anything it was a shade better for the owners than the last year's scale. The duties of third vice president Jenkins, who will be the shore representative of the engineers on the lakes, will be to settle all differences between the owners and the men, and in so doing he will assume part of the duties which heretofore fell upon President George Uhler. Mr. Jones said that there is no possibility of the lake engineers breaking away from the coast organization.

The output of lumber for Michigan during the last year and the amount on hand December 1, has just been figured out. Some results of importance have been shown. The pine forests are now about cleared away, and the shipment of hemlock is greatly increasing, whereas in former years none of it was ever sent down the lakes. The conditions of the industry last year, while showing a diminished output, were most favorable as to prices obtained for the pine product and to the demand for stocks. Hemlock, while not in such active request, developed some improvement, and this applies also to hard woods. The quantity of lumber in the hands of manufacturers at the close of the manufacturing season is also shown. It is within bounds to state, however, that at the present time there is comparatively a smaller quantity of unsold lumber in hand than ever before. The year closed with prices generally firm, and excellent prospects for the continuation of existing conditions. It is shown by the figures that the total output of all kinds of lumber in Michigan in 1901 aggregated 1,998,347,000, against 2,369,000,000 feet in 1900. A falling off in a single year of more than 350,000,000 feet furnishes an object lesson of the ruthless slaughter of the forest preserves of the state. While the lumber product diminished greatly last year, there was an increased production in shingles, due to the higher range of prices, which greatly stimulated production. A large proportion of the shingle output is cedar, the white pine available for shingle timber having decreased materially. In 1885, 3,578,138,732 feet of lumber and 2,574,675,900 shingles were shipped. In 1901 only 1,998,347,000 and 1,323,961,500 were produced throughout the state.

FLUCTUATIONS OF LAKE ERIE AT BUFFALO, N.Y.

Water level of Lake Erie at Buffalo, N. Y., compiled from record of automatic gauge located in U. S. Light-House slip, south pier, covering the years 1898, 1899 and 1901. These figures are referred to the mean level of Lake Erie which is 572.86 feet above mean tide at New York.

YEARLY MEANS.

1898 minus 0.87 feet.
1899 minus 1.13 feet.
1900 minus 1.16 feet.
1901 minus 1.73 feet.

HIGHEST STAGE.	LOWEST STAGE.
1898, Nov. 6, plus 4.0 feet.	Dec. 4, minus 4.4 feet.
1899, Dec. 12, plus 4.2 feet.	Dec. 14, minus 2.9 feet.
1900, Nov. 21, plus 6.4 feet.	Nov. 25, minus 3.8 feet.
1901, Oct. 13, plus 2.5 feet.	Mar. 13, minus 4.4 feet.

The month having the highest average stage of water during the four years was July, with a record of minus 0.79 feet for the four years.

The month having the lowest average stage, for the same period was February, the record being minus 1.68 feet for the four years.

It frequently happens that the highest and lowest stage of water recorded during any month occurs on the same day, as was the case on March 13, 1898, Nov. 3, 1899, Sept. 12 and Dec. 9, 1900 and Oct. 13, 1901. The highest and lowest of a year may be but a few days apart, as on Dec 12-14, 1899 and Nov. 21-25, 1900.

As will be seen by the above table, the highest water reached during the four years was Nov. 21, 1900, the stage being plus 6.4 feet, and the lowest on December 4, 1898 and March 13, 1901, when minus 4.4 feet was recorded on both dates. The range of fluctuation being 10.8 feet.

MONTHLY MEANS.

The following table gives the monthly mean stages of the water for the last four years. Figures show the feet and decimals below the established mean lake level.

Year.	Jan'y.	Feb'y.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1898	—1.37	—1.48	—1.10	—0.50	—0.37	—0.33	—0.55	—0.59	—0.97	—1.14	—1.04	—0.98
1899	—1.10	—1.56	—1.21	—1.15	—1.00	—0.70	—0.66	—1.05	—1.12	—1.31	—1.50	—1.17
1900	—1.55	—1.55	—1.60	—1.02	—0.76	—0.76	—0.70	—0.85	—1.08	—1.41	—1.33	—1.30
1901	—1.53	—2.12	—2.34	—2.05	—1.98	—1.48	—1.25	—1.50	—1.41	—1.59	—1.80	—1.75
Average 4 years	—1.39	—1.68	—1.56	—1.18	—1.03	—0.82	—0.79	—1.00	—1.14	—1.36	—1.42	—1.30

The table shows that the water in Lake Erie has been falling for the past four years, and particularly that for the last year the fall has been at an accelerated rate.

It also shows that at Buffalo the periods of lowest water during the navigation season are in the spring and fall, the busiest portions of the year in the harbor and when the necessity for deep water is greatest.

The foregoing is from a report by Maj. Symons, Corps of Engineers U. S. A., one of the most energetic and experienced engineers ever detailed to a lake district.

THE SUPREMACY OF BRITISH AND CONTINENTAL DEEP-SEA CABLE MAKERS.

So much has been heard latterly of the ascendency of American manufacturers in many different branches of industry over those of Great Britain and other countries as to make it a bit refreshing, in the way of variety, to note that in the matter of long submarine electric cables British, French and German makers have hitherto retained supremacy over those of the United States. Indeed, it is a matter of no little moment to American cable makers that the promoters of the Pacific Commercial Cable Co. appear not to have given them more than a passing thought in the recent placing of the order for this cable. But it can hardly be gainsaid that American cable manufacturers are not yet in a position to undertake the construction of a cable of the extent and quality of the one in question. British and Continental deep-sea cable manufacturers have, it may be said, grown up with the business, and as a result they have the machinery, and, most important, the expert knowledge necessary in the manufacture of such cables. Furthermore, much of this expert knowledge is a trade secret, and is claimed to be of such a beneficial nature that, given the same quantity and quality of material, the exercise of this knowledge in the course of manufacture will enable one manufacturer to guarantee a speed of signalling over the cable considerably greater than could another manufacturer not possessed of similar knowledge. Besides, the time consumed in the making and laying of a cable such as the proposed new Pacific cable is so great, —from three to four years—and the outlay incurred is so enormous, about $15,000,000 or £3,000,000, that even if a manufacturer without reputation for successful work of this kind should be willing to bond himself to the full amount of any actual loss in the event of failure, no wise purchaser would be justified in taking the risk, however slight, of failure. It would, therefore, seem that until the American cable manufacturer can establish such a reputation, by constructing and laying cables, for the government, for example, it is likely that British and Continental makers will continue to get the bulk, if not all, of the contracts for long deep-sea cables required by purely private corporations.—From Cassier's Magazine for February.

BEARINGS AND DISTANCES.

Considerable importance is attached to the correct ascertainment by a series of bearings of the distance off land when navigating along a coast, and Captain Hood gives a little table which should be found most useful in calculating the distances off at different points of bearing. We reproduce these from the Liverpool Journal of Commerce for the benefit of our readers. They are as follows:

The distance run from the time an object is 22½ degrees on the bow to the time it is 45 degrees on the bow equals the distance off the object at the time of the second bearing.

The distance run from the time an object is 26½ degrees on the bow to the time it is 45 degrees on the bow equals the distance the vessel will pass off the object when abeam.

The distance run from the time an object is 45 degrees on the bow to the time it is abeam equals the distance off when abeam.

The distance run from 45 degrees on the bow to 63½ degrees on plow plus 2 equals distance to pass off when abeam.

The distance run from 63½ degrees on bow to abeam plus 3 equals distance off when abeam.

The distance run from 76 degrees on bow to abeam plus 4 equals distance off when abeam.

WIRELESS TELEGRAPHY KNOWN TO THE ANCIENTS.

That there is "nothing new under the sun" is an old saying which has a fresh application since the idea of wireless telegraphy has been talked about in these days. Here is Cassier's Magazine giving a history of the "new" science and showing that the ancients, by means of sundry devices, got messages across valleys—not through them—to higher points. What Marconi and the other moderns have done is to increase the scope of the wireless system, whether it is a new discovery or a return to early principles. Its recent achievements go beyond anything yet discovered in the records of the ancients, such as the communication maintained between ship and shore and ships at sea. The Electrical Review, which accepts even the greatest possibilities of Marconi's system alludes to the voyage of the Umbria some years ago, when the steamship broke her shaft in mid-Atlantic and reached port three weeks overdue. "If some word of her condition and position could have been sent" (to the shore), the Review says, "it would have relieved an intense anxiety that was felt in at least two countries."

AUTOMATIC CUT-OFF FOR PROPELLER SHAFTS.

A considerable advance in the direction of preventing racing of engines in steam vessels is imminent. An invention has recently been perfected which practically amounts to putting a new and live man in the engine room, with the sole duty of attending to the throttle. There have been many attempts to effect this object but none have been a success, the most promising hitherto being slow in action and then cutting off too quickly. The inventor of the process alluded to describes the results of his method in the following terms: it is responsive to the slightest rise of the stern and the mechanism is so delicate that a cut off, either partial or complete, immediately, though gradually, follows—as soon as the stern approaches to the normal level, the automaton correspondingly handles his throttle, and when the level is reached the steam is turned on as before. The cutting off and the turning on can be made quicker or slower than if done by hand. The cost of the machinery is very trifling, much below what the other systems cost. In fact the whole of this process is the adoption of one or two simple appliances, and their combination.

If this invention fulfills all the expectations of its author, it will be gladly welcomed by vessel owners and engineers alike. The former will find their insurance rates considerably reduced, for it is notorious that a large proportion of missing Atlantic steamships are generally, and with good reason, accounted for by the failure of their shafts, and the premiums on the surviving craft are proportionately increased. The engineers on the other hand will thoroughly appreciate any advance which relieves them of extra work, as well as increases their expectation of life.

We await further developments with interest, and will take the earliest opportunity of laying them before our readers. We are in direct communication with the inventor, who is an old friend of the RECORD, and who has a long experience in all matters connected with shipping.

The small steamer Agitator has been sold by D. O'Connor, of Harbor Springs, Mich., to Messrs. Finnican, Wilbur and Campbell, of Charlevoix. It is said she will be run between Charlevoix, Petoskey, Harbor Springs, Cross Village and the Beaver Island next season.

WATER BALLAST ON THE LAKES.

A lake custom, which may appear startling to the ocean sailor, is that of using water for ballast, without confining it in tanks, as is the custom on salt water.

The method which prevails on the lakes on those boats which are not provided with tanks, or water bottoms, is simply to partly fill the hold with water, which is prevented from running through to the engine room by a bulkhead, generally constructed of a few planks, with a filling of cement to make them water tight.

The reason for this "ballast" in boats of the lake type is not to make them less "cranky," as their flat bottoms thoroughly insure them against that dangerous feature, which prevails with the sharp bottomed ocean vessel. This ballast is placed in lake vessels to keep their propeller wheels well down in the water, and so facilitate the progress of the vessel through the water, by the wheels taking a better hold of the water than would be the case if they were not so submerged. This is especially the case with a light boat during heavy weather, when the high seas would cause the engines to race when the stern was elevated by the action of the sea.

Since this practice came into vogue there has been a minimum of broken shafts, and lost propeller wheels through "racing."

To the uninitiated it might appear that a great danger would be incurred, from the action of the practically unconfined water in the hold of the vessel, when she was rolling, but it is not so, as experience has proven that the vessel will roll faster than the water on the inside will shift its position, so, no matter how heavy the sea, an almost perfect equilibrium is maintained.

Capt. James Corrigan, of Cleveland, is credited with being the originator of this unique method of ballasting, however that may be, he has had almost all of his vessels equipped with water-tight bulkheads as mentioned, also with sea cocks to permit the water to enter as required,

ENGINEER VERSUS CAPTAIN.

The officials of the Pittsburg Steamship Co. have just announced that the stranding of the steel barge Smeaton off Au Train on Lake Superior, last fall was due to the disregard of the engineer of the steamer of the orders of the captain. It cost the company nearly $80,000 to rebuild and release the boat.

With the object of securing the greatest economy in operation with the best results a number of steamship lines, including that of the Pittsburg Steamship Co., which controls the largest fleet of boats on the lakes, have issued orders to the engineers on their boats designating the number of revolutions per minute which engines are to make while the boats are in transit.

In the case of the Pittsburg Steamship Co., the engineers, it is said, are instructed not to exceed this limit, unless upon a written order from the captain of the vessel. This regulation, when strictly adhered to by the engineer, may bring about embarrassing situations, as it is alleged already to have done in several instances.

In this connection, the story is told that a steamer and barge of the steel trust line was crossing Lake Superior last fall, when they were caught in a heavy gale. In spite of all that could be done, the steamer and tow were driven in shore in the vicinity of Au Train. The soundings taken showed the vessel had been driven into water measuring twenty-two fathoms. Realizing the impending peril, the captain sent orders for the engineer to go ahead at higher speed. Back came a message saying the engineer could not comply with the order unless it was presented in written form. Again the captain sent word that he at that time was too busy to write an order; that the steamer and barge were fast being driven on a lee shore, and unless the engines were let out either both boats would soon be aground or he would be compelled in order to save the steamer to let go the tow line of the barge and leave her to her fate. Not even this had the effect of moving the engineer, and the captain was obliged to order the barge's tow line thrown off.

That is said to be the way in which the big steel barge Smeaton went ashore on the rocks below Laughing Point in Lake Superior, last fall. If the story is true, it would seem as though some revision of the rule in question ought to be made which would allow engineers to exercise more discretion in case of emergencies, even to the extent of obeying verbal orders first, and afterward securing written ones, if required.

The Pittsburg Steamship Co. carries its own insurance on vessel property, otherwise some question might arise regarding settlement of insurance damages on vessels meeting with accident through an engineer's standing on a technicality, even though backed up by the orders of the company or its chief engineer. In some vessels the refusal of an engineer or any other member of the crew to obey orders would be classed as mutiny and the offender would be immediately clapped in irons.—The Daily Mining Gazette, Houghton and Calumet.

Two freighters will be launched at lake yards next Saturday. The steamer W. H. Gratwick, building for the Etna Steamship Co., of which Capt. John Mitchell is manager, will be launched at Cleveland and the steamer W. W. Brown, named for the manager of the United States Transportation Co., will be launched at South Chicago.

EARLY SUBMARINES.

A CURIOUS HISTORY.

It is often said that the first attempts at solving the problem of submarine navigation are hardly more than a century old, but this is incorrect, inasmuch as the idea of penetrating the depths of the sea suggested itself to at least one of the ancients, and was a more or less engrossing pursuit with several seventeenth century inventors. The ancient exponent of submarine warfare was Alexander the Great, who made use of divers' bells at the seige of Tyre, B. C. 332. Submarine navigation, however, appears as an object of discussion only with the sixteenth century. Bacon mentions it in describing the experiments carried out at Toledo, in 1538, before Charles V. The vessels were something like divers' bells, and several men could remain under water a long time in them. Quite as vague are the descriptions of William Bourne and Magnus Vebelius about the year 1600, in reference to other apparatus designed for submarine use. But, the father of submarine navigation may be said to be Cornelius Drebbel, a Dutch philosopher and scientific inventor, who settled in England in 1600. In London, in or about the year 1620, Drebbel built an impermeable submarine boat, in which twelve rowers and some passengers could be carried. This vessel appears to have embodied the principle now common to all submarine boats, namely, of the water-ballast compartments, with pumps for emptying them, to restore the buoyancy of the vessel. Respiration was obtained by means of a wonderful liquid invented by Drebbel himself, and called "quintessence of air." This liquid had the properties of purifying and regenerating vitiated air If the accounts of the matter are correct, Drebbel submerged and navigated his boat, without the use of artificial light, from Westminster to Greenwich. After this James I. was anxious to take a submarine trip, but was eventually dissuaded by his courtiers. The inventor jealously guarded the secret of his invention, and died in 1634 without having been able to perfect it.

Following Drebbel a number of inventors worked at the problem; and one, Father Mersenne, advanced some important improvements. Mersenne, in fact, was the first advocate the fish-shape, realizing that to be able to go forward and astern without turning would greatly facilitate the navigation of submarine craft. He also suggested the use of phosphorescent substances for internal illumination; while his scheme for obtaining a supply of fresh air was was by the use of tubes, wrapped in leather; which should float on the surface. Leather bags, furnished with "fauces," and fixed to trap doors, were to serve for exit to the men, and the materials in the boat. But Mersenne's project for a submarine vessel was purely theoretical. In the year 1660 a French engineer built at Rotterdam a semi-submarine boat, 72 feet in length. It was crossed from stem to stern by great beams, which ended in solid spikes. The craft floated on the water level, and was propelled by a paddle-wheel, situated in the center of the boat between two impermeable walls. The boat was intended to act as a ram, the spikes being destined to bore holes in the hull of a hostile vessel below her water-line. However, no serious trials with this curious craft are believed to have been made.

Tradition relates that somewhere about the close of the same century a Yarmouth mechanic named Day, invented a submarine boat, in which he, at the first trial, succeeded in remaining under water for twelve hours. The second trial was not so fortunate, for neither boat nor inventor ever returned to the surface; indeeed, neither was ever seen again. But the annals of Yarmouth appear to be silent on the subject, which omission, of course, rather discredits the story. A long break then occurs before we hear anything further of submarine craft; but when at last the silence is broken, during the American War of Independence, the result is startling in the extreme—for an American inventor, named Bushnell, then actually got under an English frigate by the agency of a submarine. Bushnell's vessel, the Turtle, so called because it was formed of two parts resembling turtle shells, was submerged by means of water compartments, and propelled by a kind of horizontal screw, both contrivances being actuated by the one and only man on board. Two reservoirs of air answered for the purpose of respiration; a little conning-tower at the top enabled the navigator to see where he was steering; the thermometer and barometer inside were rendered visible by a coating of phosphorescent composition; while if the pump that expelled water from the compartments failed to act, a large mass of lead could be detached from the keel, and thus a return to the surface be assured. For offensive purposes, the craft was equipped with an apparatus that enabled the navigator to attach an infernal machine to the keel of a ship. In 1776 Sergeant Ezra Lee went down in the Turtle, with the object of torpedoing H. M. S. Eagle. The submarine herself answered splendidly; but owing to an iron plate in the Eagle's keel, the torpedo failed to catch, and floating off, exploded prematurely, inflicting no greater damage than the shattering of the cabin windows. After this we hear nothing more of the Turtle; but in 1801 another American inventor, named Fulton, who had joined with Bushnell in his experiments, journeyed to France, where he built for Napoleon a sister-vessel to the Turtle. This craft, christened the Nautilus, could remain for a long time under water, and was also fitted with folding masts and sails to navigate on the surface. Napoleon, however, refused to profit by it, whereupon Fulton crossed to England, and offered his invention to Pitt. The latter favored this novel engine of destruction, but as he was unable to persuade the Admiralty to his way of thinking, Fulton returned to America without having sold his patent.

In 1823, a Frenchman, named Montgery, took up Fulton's idea, and planned a large submarine boat, to accommodate a crew of 100. This however, never became anything more than a plan; but Montgery's project is the one on which Jules Verne based his famous romance "Twenty Thousand Leagues under the Sea." At about the same period, also, an American syndicate was formed for the construction of a submarine vessel, with which to effect the rescue of Napoleon from St. Helena—a scheme nipped in the bud by the death of the erstwhile Emperor. In 1845, Dr. Payerne's half-submarine, half diving-bell, the Hydrostatic, was successfully employed in removing sunken rocks at Brest and Cherbourg. When theboat had once sunk to the bottom of the sea, air was compressed in the hold so as to counterbalance the pressure from without, and the bottom being thrown open the crew could work on the ground as though they were in a diving bell. In 1851, during the blockade of Keil, a man named Bauer built a submarine boat, propelled by a screw rotated by hand. This boat carried torpedoes and an apparatus for fixing them, which being accomplished, the navigator exploded them from the vessel by electricity. Bauer's trial trips turned out well till at length he ventured to a depth of 30 fathoms, whereupon the pressure destroyed the boat and the inventor. It may here be noted that submarines of the Holland type are equipped with an automatic mechanism that checks their sinking to a greater depth than 21 fathoms.

During the blockade of Charleston in 1863 the Confederates adopted Bushnell's idea for a submarine boat by constructing the David—a cigar-shaped, iron vessel. sinking and rising on the water-compartment principle, and propelled by hand-power. The David had caused the death of two crews before she made her famous attack upon the Federal ironclad Housatonic. At the last moment, however, the crew became fearful, and insisted upon delivering the attack upon the surface, and with the manholes open. This timorousness proved their own undoing. The torpedo was disharged with deadly effect; the Housatonic split amidships, and sank like a stone; but the great wave which she caused broke over the David and flooded the man-holes, so that six out of her crew of eight also lost their lives. This affair created a feeling of horror throughout the civilized world, and the submersible boat was execrated as a diabolical machine which ought to be forbidden by international law. This prejudice had the effect of putting a stop to further experiments with submarine torpedo vessels for a period of twenty years. In 1885. however, Mr. Nordenfelt built at Stockholm a submarine boat which marked the commencement of the latest stage of its development. It was made of steel, had two tillers, and attained the desired positions, not by water ballast, but by the means of two vertical screws. In choosing a steam engine as his motor, though, the inventor made his work doubly difficult. Nordenfelt's boat was exhibited at Landskrona in the presence of officers sent by all the great Powers in September 1885; and was successfully tried in Southampton water in December 1887. Lastly, in 1888, France commenced those experiments which have resulted in the recognition of submarines by her own, the United States, and British Governments, in the order named.—Globe.

STATEMENT OF THE VISIBLE SUPPLY OF GRAIN.

As compiled by George F. Stone, Secretary Chicago Board of Trade, January 25:

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels
Buffalo	5,256,000	579,000	536,000	30,000	985,000
" afloat	538,000	84,000	.....	.....	.....
Chicago	6,796,000	4,597,000	552,000	1,053,000	189,000
" afloat	417,000	.....	.....	77,000	.....
Detroit	494,000	190,000	29,000	150,000	8,000
Duluth	9,904,000	259,000	176,000	453,000	263,000
" afloat	511,000	.....	.....	.....	.....
Fort William, Ont.	4,068,000	.....	.....	.....	.....
Milwaukee	513,000	85,000	331,000	48,000	164,000
Port Arthur, Ont.	70,000	.....	.....	.....	.....
Toledo	133,000	1,071,000	340,000	242,000	3,000
Toronto	30,000	.....	14,000	.....	45,000
On Canals	46,000	3,000	112,000	37,000	50,000
Grand Total	59,373,000	11,632,000	4,132,000	2,441,000	2,073,000
Corresponding Date, 1900	60,791,000	14,137,000	10,154,000	1,214,000	1,939,000
Increase for week	100,000	.....	.....	157,000	.....
Decrease " "	.....	120,000	79,000	....	88,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

THE boats on the Miami and Erie Canal from Cincinnati to Toledo will shortly be towed by electric locomotives, says the Mechanical Engineer. These locomotives will each be equipped with two 125 horse power alternating current motors of the Westinghouse type. In the city the current will be delivered at 380 volts and in the country at 1,100 volts. Along the first sections of the line from Cincinnati to Dayton, there will be four transformer stations, and current will be delivered from lighting plants in the various towns at 33,000 volts. When towing boats the locomotives will have a speed of about three miles an hour, but by cutting out one of the motors this can be increased to six miles an hour, when it is desired to cut loose from the boats.

SHIPPING AND MARINE JUDICIAL DECISIONS

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.

Shipping—Loss of Cargo—Negligent Unloading of Lighter.—A lighter was loaded with 100 barrels of cement in the hold and a large number of rolls of bagging, weighing 253 tons, piled upon the deck. It was the duty of respondent to transfer the load to a steamer; and when a portion of bagging had been unloaded, all of which was taken from the side next the steamer, the lighter listed to the other side, and a portion of the bagging was thrown overboard, and lost or damaged. The load was unusual in weight and height, but not to an extent to endanger it if properly handled. It was properly loaded, and the lighter had been brought with it a considerable distance in safety. Held, that the fact of its unusual height required that in unloading the removal should be distributed as evenly as possible over the whole load, which was also shown to be the usual way, and that the negligent manner of unloading was the cause of the vessel's listing, and rendered respondent liable for the damage. McAllister vs. Southern Pac. Co., 111 Fed. Rep. (U. S.) 938.

Settlements with Seamen before Commissioner.—The purpose of the statute in requiring settlements with seamen to be made before a shipping commissioner is to guard against their being overreached by the master, by placing the parties on an equal footing; and the provision of Rev. St. Sec. 4552, that on the completion of any discharge and settlement "the master or owner and each seaman respectively, in the presence of the shipping commissioner shall sign a mutual release, * * * and the shipping commissioner shall sign and attest it, does not require that all the parties shall appear before the commissioner and execute such release at the same time; but a master may leave with a commissioner a proposition for settlement together with the wages due thereunder, and a release executed by the seaman, and the signing of the release by them, and its attestation by the commissioner, such release becomes effective, under the statute. Peterson et al., vs. Empire Transportation Co., 111 Fed. Rep. (U. S.) 931.

Coercion—Facts Considered.—Seamen signed for service on a vessel employed as a government transport for a voyage to Manila and such other ports as the master might direct and return to the Pacific Coast for redischarge; the voyage not to exceed six months. At the expiration of the six months the vessel was at Manila, and they demanded their payment and discharge. Under orders of the military governor, their demand was refused, and on their refusal to serve longer they were arrested and confined by the military authorities, and subsequently returned to San Francisco by another vessel. In the meantime the transport had arrived and departed on another voyage; the master leaving with a shipping commissioner the amount of their wages to the time they were taken from the vessel, together with a release executed by him. On their arrival they demanded wages up to that time. They were told by the commissioner (in a joking way, as he testified that they were lucky to get anything, and that they were not ordered shot at Manila. They were without money, and finally accepted the sum left with the commissioner, and executed the release. Held, that there was nothing in such circumstances amounting to legal duress or coercion, and that they were concluded by the relaese. Pettersson et al., vs. Empire Transportation Co., 111 Fed. Rp. (U. S.) 931.

EASTERN FREIGHTS.

Messrs. Funch, Edye & Co., New York, report the condition of the eastern market as follows:

We are unable to report any relief from the continued depressed condition of freights prevailing for sime months past, and regret there are no signs of improvement within the near future. The small number of fixtures reported this week testify to the limited number of orders in the market, and as the available tonnage is more than sufficient to meet present demands owners are finding great difficulty in securing business for steamers bound for this coast. Grain shippers are still unable to effect new business, and what little is passing can readily be handled by the regular liners. Cotton charterers from the Atlantic ports are experiencing difficulty in completing the steamers they already have under charter, and are therefore, indifferent about making new commitments. Tonnage is offered very freely for timber, and a prompt boat has accepted the low figure of 80s, consequently shippers have reduced their ideas for future months. Some few charters have been effected on time basis, but these have been principally for special trades.

Business of consequence in sail tonnage continues absent, and with few vessels offering at prevailing unremunerative rates, the situation remains nominal.

THE Earl of Crawford has devised a means of manipulating a vessel's rudder by means of electricity from any part of the ship. A practical demonstration of the invention was recently given upon the inventor's steam yacht "Valhalla" in the Solent before several representatives of the British and Japanese navies, who were considerably impressed with the device. It is stated that the British Admiralty proposes to give the invention a thorough trial upon one of the battleships. The most prominent feature of the device is that it is not so liable to accident as the steam gear, and it is much easier to manipulate.

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CLEVELAND, O., JANUARY 30, 1902.

GROUND TACKLE.

Commander A. S. Thompson, C. B., R. N. R., read a paper this month before the London Chamber of Commerce on "Anchors."

The lecturer touched upon the earlier forms of iron anchors, the first of which were stockless, with only one arm or fluke. Grapnels are not efficient for holding purposes. Mushrooms are useful for mooring buoys, and their propensity for becoming "sanded up" constitutes their chief advantage. The stock of the ordinary anchor was originally provided simply to cant the anchor, and so make the lower fluke bite into the ground. Proceeding he said that at the beginning of last century a clerk in Plymouth naval yard suggested certain improvements, the most important of which was making the arms curved instead of straight. The holding power of an anchor depends upon two principal conditions, namely, the extent of useful holding surface, and the amount of vertical penetration. Now the measure of penetration and also, to a limited degree, that of useful holding surface, is the vertical distance from the lower portion of shank to the pea, or extreme end of the arm, when fully buried. This distance evidently depends on the length and on the inclination of the arm. Some inclination the arm must have, in order to bring about penetration; yet the more at right angles to the shank the greater the penetration. These two opposing conditions are reconciled by curving the arm to the arc of a circle having its center in such a position that the radius of the curve is about a third of the length of the shank. Two minor advantages also accrue. During the process of tripping or breaking out the anchor, the buried arm continues its curved path in the ground until the shank is nearly vertical and the pea ready to emerge with the best possible resistance. The old-fashioned straight arm, on the other hand, retained a more or less horizontal direction in the ground, until the leverage derived from the effective length of shank became very much reduced. In the year 1831 chain cable began to supersede the hempen ones, with the result that the long shanked anchors hitherto in vogue were no longer necessary, and anchors with shorter shanks and with heavier and stronger crowns gradually came into use. In consequence of these changes, a commission was appointed, in the year 1838, to inquire into the holding power of anchors, and a principal result of their labors was the adoption of the so-called Admiralty pattern anchor, which continued to be used in the navy up to 1860. The invention of the steam hammer in 1842 made the welding of heavy masses of iron a comparatively easy and reliable process, so that the strength of anchors kept pace with that of the chain cables which had come into general use. A great number of patents for anchors were taken out prior to the Great Exhibition of 1851, and public attention having been called to the models there shown, in the following year a committee was appointed by the Admiralty to report on the qualifications of anchors of the various kinds. Practical trials were then instituted, and, as a result, Trotman's anchor took the highest place out of eight competitors, Rogers' anchor being second on the list. Rogers' anchor, dating back to about 1840, is named after the designer, Captain Rogers, R. N., who, for forty years or more, devoted much attention to the subject of anchors, taking out many patents. This anchor, which, in its present improved form, has been in use for many years, is generally acknowledged the best of ordinary shaped anchors. It is made of iron of square section, possessing great strength in shank and crown. The plans were at first made comparatively small to ensure good penetration, but nowadays they are made somewhat larger. Mr. Richard Green, of Blackwall fame, in giving evidence before a select committee in 1860, said "he preferred Rogers' original anchor on the whole, because it had very small palms, the crown going right into the ground. They did not make such a large hole and disturb the ground so much as broad palmed anchors. The anchor generally known as Trotman's is the first and the best of the so-called patent anchors. It is an improvement on the Honiball, better known as Porter's. The original, under the designation of the "Tumbling Fluke Anchor," was the invention of Lieutenant Beldier, R. N., in 1818. When the anchor bites the lower arm enters the ground, while the other arm bears against the upper part of the shank. In this way great penetration is obtained, with a corresponding increase of holding power; but when the lower arm became jammed between the ground and the shank, the anchor occasionally failed to open out so as to bite, or dragged some distance before doing so. This defect was subsequently remedied by Mr. John Trotman, who adopted supplementary canting palms, which caused the anchor to bite readily. These supplementary palms make fouling by the cable possible, while they tend to lessen penetration and to break up the ground; they also offer considerable resistance to quick tripping, as is shown by the results of the Admiralty trials in 1852, when for quick tripping a proportion of seven was awarded to Porter's, as against three to Trotman's, the average value of the three competing anchors being about six. The weak points of the otherwise excellent anchor are to be found, of course, in the pivot and forked shank, especially when used on hard or rocky bottoms; but breakages due to failure of these portions have seldom occurred when the anchors have been properly looked after. The anchor invented by a Frenchman named Martin, about the year 1865, was found to possess distinct and important advantages over most of its predecessors, and it still retains a foremost position. The great feature of Martin's anchor is the small space it occupies when stowed; it is short, narrow, and lies flat. In common with Trotman's anchor, it is without a weld, being forged in two principal parts, but it has greater strength in the crown. In construction it is simplicity itself; a solid, round, accurately fitting bar is first passed through a hole in the square shank-head, and afterwards bent and forged to form the arms and flattened out palms. The short auxiliary stock is then fitted on the ring end of the square shank and keyed to its place. The stock is really unnecessary. The most serious defects seem to be insufficient penetration, absence of vertical curvature in the arms, and a too general distribution of total weight. The weight of an anchor should be concentrated as far as possible in the crown and arms, as provided for in Lloyd's Register's rules, which now require the heads of stockless anchors to be not less than three-fifths of the total weight. These anchors are also rather difficult to trip out of hard ground, owing to the long flat palms and small shank leverage. On hard bottoms, therefore, there is a tendency to hold only by the tips of the palms, and by the lower edge of the stock; and in soft bottoms the anchor may break up the surface ground and drag. Martin's anchors are generally used in the ships of the Royal Navy, where low flat stowage and economy of space are all important. Most modern stockless anchors are modifications of Martin's principle, though differing considerably in detail. The stock is entirely dispensed with, the shank being generally light and taper, serving merely as a lever for tripping and for housing the anchor. When commanding telegraph cable ships, I had considerable experience with the "Wasteney Smith" steel stockless anchor, putting it to the severest tests in competition with a Rogers' anchor of about equal weight, with very good results. It is what may be called a hammer-headed anchor, having its weight concentrated in the head or business end, of the simplest construction, and practically unbreakable. This anchor came out exceedingly well in the trials recently carried out by the Admiralty of Spithead with the object of testing the holding power and efficiency of stockless anchors. Under test conditions the Wasteney-Smith anchor refused to budge, even when the engines worked at 80 revolutions, developing upwards of 3,000 horsepower, the utmost available. These trials, though of a very practical nature, can scarcely be taken as conclusive; yet they serve to show the value and reliability of stockless anchors of approved construction. Apart from questions of convenience of handling or stowage, should any preference be given to stockless over stocked anchors, the necessary condition of weight for weight should always be insisted on. After all, by far the most important considerations are weight and strength. The rough rule is that the safe-working load of an anchor should equal the resistance of the ship at a speed through the water at 12 knots. The testing or proof strain is generally taken at twice the working load, and the breaking strain at about six times. Stockless anchors have great advantage in strength over anchors of ordinary form, very rarely breaking under steady strain and fair conditions. The Celtic, the largest vessel afloat, is supplied with three Hall's stockless bower anchors, each weighing 7¾ tons. As regards the Great Eastern, it appears that in 1859 she was exclusively supplied with Trotman's anchors, not much exceeding five tons inweight, exclusive of stock. Anchors of varying weight and size were known as "bowers," "best bowers," and "sheet anchors." Nowadays the working or bower anchors are generally the heaviest carried, yet there is reason to suppose they are in many instances too light to ensure safety at critical times. This is perhaps a natural outcome of steam propulsion, a steamship being much less dependent on her anchors for safety than a sailing vessel. For instance, in 1858 Lloyd's advised 54 cwt. anchors for 2,000-ton vessels, but in 1884 this weight sufficed for steamships of 6,000 tons under the Underwriters' Registry. In the Navy five-ton bowers are supplied to all vessels over 3,500 tons displacement, yet to-day a merchant vessel displacing 10,000 tons may have anchors of under three tons total weight. It is true the largest men-of-war carry nothing heavier than five tons. The Great Eastern, for instance, with her five-ton Trotman anchors exstock, equivalent perhaps in holding power to seven-ton stockless of the present day, had only 2⅞ chain; whilst under Lloyd's rules the size of chain corresponding to seven-ton anchors is3 5-16. The Celtic can certainly be no heavier on her anchors than the Great Eastern, yet the former vessel's chain cables are probably 3½. It is, however, under extraordinary conditions that real danger of dragging the anchors arises; if it will not hold, of what avail the weight and strength of the cable? A light vessel having her hawse 30 feet above the water, anchoring in seven fathoms, should wear to at least three times seven plus five or 36 fathoms, rather than to 21 fathoms. The weights given in Lloyd's Register's rules for vessels of varying size are well understood to be minimum weights required; yet, in practice, they represent the maximum it is in most cases thought necessary to provide. It seems worthy the consideration of Lloyd's Register and kindred institutions whether the rules governing weights of anchors now in force are sufficient to meet all the circumstances of modern navigation, and whether some revision should not be effected in the general interests of shipping. A vessel may during a whole voyage have to depend on anchors which are of less weight than the minimum applicable in her case. This arrangement is probably a relic of the practice prevailing, as already pointed out, before the days of steam windlasses. It would seem to accord better with modern ideas and seamanship to carry bower anchors all of the same weight and holding power. In some stockless anchors the head appears to revert in some measure to the mushroom form, the arms being comparatively short and weak. Weight for weight, the best anchor is that which gives the greatest penetration, combined with greatest useful holding surface.

THE MEN WHO CONTROL THE COUNTRY.

Here, then, is a vast continent, belted and banded and criss-crossed with 200,000 miles of railroads. Many of the roads are great independent lines, and some are systems controlled by groups of men outside the five large syndicates. But practically half the stupendous network, affecting in one way or another every inhabitant in the country, is in possession of five little bodies of men with headquarters in New York. A strip of land hundreds of miles wide, beginning at the Washington ports in the northwest and sweeping east to the lakes, is practically an industrial field of Mr. Hill and Mr. Morgan. In Mr. Harriman's hands in some measure is the prosperity of California and the southwestern states, as well as a broad strip up the Mississippi valley, a fertile band through the prairie states, and all the habitable land reaching west from the Rockies to the coast. The Central Atlantic states live to the rythm of the New York Central and the Pennsylvania railroad. It is true that one can go from Boston to San Francisco, from the Gulf to St. Paul, and travel not a mile on the roads of the railroad giants, but only through a very narrow pathway and for the most part within view of competing syndicate lines on either side. And who that travels on railroads or receives freight from railroads or sends his products by railroads within our borders does not do so over the colored lines on the accompanying railroad map, over the lines of these giants? When it is remembered furthermore, that Morgan men are directors in Vanderbilt roads, Hill men in Pennsylvania roads, Gould men in Harriman roads, and that every other possible interweaving of common control exists throughout the great groups, the lines of demarcation melt away and we see dimly outlined a condition of affairs which may possibly take the hue of monopoly.—M. G. Cunniff in the World's Work.

With the object of securing the greatest economy in operation with the best results as regards dispatch, chief engineers of a number of steamship lines, including that of the Pittsburg Steamship Co., which controls the largest fleet of boats on the lakes, issue orders to the engineers on their boats, designating the number of revolutions per minute which engines are to make while the boats are in transit. In the case of the Pittsburg Steamship Co. the engineers, it is said are instructed not to exceed this limit, unless upon a written order from the captain of the vessel. This regulation, when strictly adhered to by the engineers, may bring about embarrassing situations, as it is alleged already to have done in several instances.

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS.—MICHIGAN.

TREASURY DEPARTMENT,
OFFICE OF THE LIGHT-HOUSE BOARD,
WASHINGTON, D. C., January 23, 1902.

LAKE MICHIGAN, EASTERLY SIDE.

Manistee Light-Station.—Notice is hereby given that owing to improvements to the illuminating apparatus, the light at this station, on the northerly side of the mouth of Manistee river, easterly side of Lake Michigan, will be temporarily discontinued from February 24 to March 5, 1902, after which it will be re-established without change of characteristic.

White River Light-Station.—Notice is hereby given that on or about February 20, 1902, the characteristic of the light at this station, on the southerly side of the entrance into White Lake and river, easterly side of Lake Michigan, will be changed from fixed white varied by a red flash every 40 seconds to flashing alternately red and white; interval between flashes 20 seconds.

No other change will be made.

During ten days previous, or from February 10 to February 20, 1902, the light will be temporarily extinguished to make the change.

Grand Haven Light-Station.—Notice is hereby given that owing to improvements to the illuminating apparatus, the light at this station, on the bluff at the southerly side of the entrance to Grand river, easterly side of Lake Michigan, will be temporarily discontinued from January 31 to February 10, 1902, after which it will be re-established without change of characteristic.

LAKE ONTARIO.

Galloo Island Light-Station.—Notice is hereby given that on the opening of navigation, 1902, or as soon thereafter as practicable, the color of the tower at this station will be changed from gray to white.

The station is located on the southwesterly end of Galloo Island, easterly end of Lake Ontario.

Stony Point Light-Station.—Notice is hereby given that on the opening of navigation, 1902, the characteristic of the fifth-order light at this station will be changed by reducing the interval between flashes from 2 to 1 minute so that it will thereafter be fixed white varied by a white flash every minute.

The station is located on Stony Point, easterly end of Lake Ontario.

Big Sodus Outer Light-Station.—Notice is hereby given that on the opening of navigation, 1902, the characteristic of the fourth-order light at this station will be changed by reducing the interval between flashes from 2 minutes to 30 seconds, so that it will thereafter be fixed white varied by a white flash every 30 seconds.

The station is located on the outer end of the west pier, entrance to Big Sodus Bay, southerly shore of Lake Ontario.

By order of the Light-House Board:

N. H. FARQUHAR,
Rear-Admiral, U. S. Navy, Chairman.

MARINE PATENTS.

691,752. Hatch cover. Winfield W. Dowley, Geneva, Ohio.

691,792. Screw Propeller. Frank C. Vetz, Allegheny, Penna.

691,803. Water cycle. Sylvester R. Perry, Worcester, Mass.

691,976. Truck for masts or flag staffs. Simon H. W. Seib, Jersey City, N. J., assignor to Seib Bros., same place.

692,991. Apparatus for raising sunken vessels. John Barker, Seattle, Wash.

692,030. Excavating machine for dredging. Robert H. Postlethwaite, San Francisco, Cal., assignor to Risdon Iron & Locomotive Works, same place.

692,084. Bow facing oar. George F. Sprague, Gettysburg, Pa., assignor of one-half to S. H. Garies, Port Jervis, N. Y.

692,117. Marine Propulsion. Isaac M. Chase, Washington, D. C.

692,161. Automatic regulator for marine engines. Daniel Mahoney, Brooklyn, N. Y.

VESSELS CLASSED.

Vessels classed and rated this week by the American Bureau of Shipping in the "Record of American and Foreign Shipping," New York: Screw "Brandon," screw "El Alba," schooner "Prescott Palmer," schooner "James Pierce," schooner "Adelaide Barbour," schooner "Kenwood," schooner "Gage H. Phillips," bark "Adam W. Spies" bark "Virginia," steamer "J. S. Hopkins," three masted schooner, "Viola Reppard," bark "Willard Mudgett," British three masted schooner "Nellie Louise" and British three masted schooner "W. N. Ewicker."

The Craig Ship Building Co., of Toledo, has been awarded a contract for the construction of a tank steamer for the transportation of oil from Beaumont fields in Texas to New York and other Atlantic coast cities. The steamer is to be of full Canadian canal size, with tank capacity for 900,000 gallons of oil, and will cost about $230,000. She is to built for the Sun Oil Co., and work upon her will begin before the close of February.

CLEVELAND.

Special Correspondence to The Marine Record.

The Pittsburg Coal Co. has bought the barge W. G. Perry and will use her as a lighter at this port. The Perry is a new vessel and was in the lumber trade last season. She is laid up at Bay City.

Mr. Peter Barry, of Chicago, who is figuring in operating the steamers Badger State and Empire State on the Cleveland-Detroit route next season, was in the city this week. Capt. Barry came here to confer with local parties that are interested in the deal.

S. Fixs' Sons, Steam Flue Molding Works, Leonard and Winter streets, are kept quite brisk and busy these times. At the present tubes are being welded for firms in five different states, and an especial large order is being put through for a firm in Louisville, Ky.

The steamer Dan Kuntz is having new rails, stanchions and a general overhauling at the yards of William Sweeney on Whiskey Island. New flooring is also being put into the steamer John W Moore, and she will also be overhauled for any other repairs found necessary.

Capt. J. H. Buchanan, of Erie, has been appointed assistant superintendent for the Pittsburg Steamship Co. He will be located in this city. Capt. Buchanan, who is a young man, was master of the barge Magna last season and laid up a number of the consorts of the big fleet last fall.

Mr. Dave Viancourt, the well known copper and tinsmith, of Pearl street, is meeting with a large and increasing business. He has been successful in securing many contracts in his line from various vessel owners. He has lately extended his business so as to include stoves and hardware.

Fred Harmon, the lake engineer who has been suspended from the engineers' association will carry his case to Washington and appeal to the Steamboat Inspection Service. It is said that nothing can be done in his favor at Washington as the society is a private body and not amenable to the government restrictions.

The fixing of prices of ore did not cut as much figure in the trade as in former years, as many of the furnace men had closed contracts running through a number of years. Some sales of old range Bessemer ores were made, and it is expected that most of the merchant furnacemen will place orders before the close of the week.

At the last regular meeting of the Marine Engineers, there being much dissatisfaction expressed at the disposition made of the case of Fred M. Harmon, the case was brought up for reconsideration, and the final verdict was that he be definitely suspended for a period of fifty years without a dissenting vote, thus closing the case for good.

The new lighter which the Great Lakes Towing Co. is soon to order is to be named the T. F. Newman. This is in honor of the president of the company, who was the prime mover in this organization; has dictated its policy since, and has been responsible for the success which the company has made. The new lighter will be the most powerful wrecking craft upon the lakes.

The Great Lakes Towing Co. closed a contract with the Jenks Ship Building Co., of Port Huron, for a steel lighter to cost about $40,000, a capacity of about 1,300 tons, to be completed next May and stationed at Detroit. The lighter will be 173 feet long, 36 feet beam and 15 feet deep. She will have clam-shell buckets and everything modern for the rapid handling of cargo and will have steam pumps aboard. The deal was closed on Wednesday. Mr. A. M. Carpenter, secretary and general manager of the shipbuilding company, signed the contract.,

The indications are that the much talked of Shipmasters' Protective Association will not do any business this winter. Since the organization of the United States Steel Corporation and all the boats of the Bessemer Steamship Co., Minnesota Steamship Co., Mutual Transportation Co., Menominee Transit Co. and Pittsburg Steamship Co. were turned over to the last named company there has been considerable kicking on the part of the masters. They claimed that they were not treated fairly, and that if they did not make a stand they would not cut as much figure in the operation of the ships as the deckhands.

The wage scale of the Marine Engineers' Beneficial Association will be presented to the lake owners in a few days. It was prepared at Washington by the general organization and the delegates brought it back with them when they came home on Sunday. The request as to wages for the year has not been put in shape to present to the owners, but it is being worked upon and will be ready in a short time. Concerning the headquarters for Evan I. Jenkins, the new vice president, the latter said last night that he was not located definitely as yet and may establish no permanent headquarters, his duty being to go anywhere that the organization seems to have need of him.

The Licensed Tugmen's Protective Association elected officers and the Lake Michigan delegates won out in the race for president by electing Capt. Charles McCarle, of Chicago. Four men entered the race but Capt. Harry Coulter, of this city, was the only candidate that had a chance against the Chicago man. A local man landed the office of first vice president. The officers are as follows: President, Capt. Charles McCarle, Chicago; first vice president, M. J. Burns, Cleveland; second vice president, J. C. Kitchen, Sheboygan; third vice president, J. R. Cook, Sault Ste. Marie; secretary, Harry H. Vroman, Buffalo; treasurer, Charles Gagnon, Two Rivers.

The firemen and oilers of the Pittsburg Steamship Co., have come to an agreement with Chief Engineer Joseph Hayes, of that organization, as to wages for the year. The men asked for $1.75 a day of ten hours. The company offered to pay $1.50. After a long discussion it was agreed to compromise for a nine-hour day upon the basis of $1.75 for ten hours. The men, therefore, will get seventeen and one-half cents an hour for a nine hour day. The engineers only work nine hours a day, and the firemen and oilers did not want to stay the additional hour, hence the compromise. The basis is the same as that in operation between the firemen and oilers and the Anchor Line at Buffalo.

The steel steamer Minnetonka, which was built at the local yard of the American Ship Building Co. for ocean trade, has been cut in two and is being put in shape for a trip to the coast. The work is being done at the company's dry-dock at the head of the river bed. Bulkheads will be placed in the ends of the hull. The work will be completed by the end of the week. In about six weeks the Minnewaska, the second of the steamers building for the American Navigation Co. for coast and ocean trade, will be placed in dry-dock for the same work that is now being done on the Minnetonka. They are too long to go through the St. Lawrence system of canals without being cut in two, bulkheaded and floated through in two parts.

The committee on Aids to Navigation of the Lake Carriers' Association will meet on Thursday morning to map out the work for the year. The members have ideas which they propose to submit to the general committee, and it is expected that some sweeping changes will be made in the lights. The principal thing at present up before this committee is the work of obtaining from the government a sufficient appropriation to maintain the lightship on Southeast Shoal. The general committee of the Lake Carriers' Association will try to persuade Congress to buy a ship for this spot, and then it will be the province of the special committee on lights to obtain the appropriation to maintain it. The question of purchasing the lightship will be discussed by the same committee that will go to Washington to lobby for the Rivers and Harbors bill.

The first meeting of the Executive Committee of the Lake Carriers' Association this year was held at the office of Mr. J. C. Gilchrist on Wednesday. Harvey L. Brown, Esq., of Buffalo, the new secretary of the association, attended the meeting and Capt. James Corrigan presided. The first matter taken up was the wages of the shipping masters at the different ports and after an advance of 10 per cent. was made all around it was voted to increase the salaries of the treasurer, counsel and chief shipping master. The salary of Capt. George P. McKay, who is treasurer and also chairman of the committee on aids to navigation, which was $1,800, was made $2,400. Capt. McKay devotes all his time to the work of the association. Counsel Harvey D. Goulder's salary was advanced from $1,500 to $2,500 and Chief Shipping Master A. R. Rumsey got an advance of $200, making his salary $2,400.

The Lake Carriers' Association will, at a meeting of the executive committee, consider the feasibility of admitting to the association tonnage having a Canadian register. This has never been done, and is considered a wise thing at this time. It is also considered more neighborly. The greatest possible gulf has always existed between the vessel owners on the Canadian and the States side, and there has never been even the slightest co-operation for the general good. It is believed that a body which would include these two sets of owners would bring about more cordial relations, which would be for the betterment of the interests of the lakes, especially as it might make it easier to obtain legislation for matters where the lighting of channels, for ships in Canadian waters, and the rights of foreign built ships in American waters are in question. The tonnage registered in the association is upwards of 800,000 tons, which it is expected will be increased to 1,000,000 this year. The possibility of obtaining Canadian tonnage would further increase the power and effectiveness of the organization.

The executive committee of the Lake Carriers' Association will hold a meeting on Wednesday morning in the office of J. C. Gilchrist. One topic to come up will be the discussion of the rules governing the bridges across the Cuyahoga river. These rules have been submitted by Major Dan C. Kingman for such a discussion and for a reply. It is expected that the organization will give its endorsement to the set of rules, since they aim at giving the boatmen better service than ever before. One of the interesting features and one of the most satisfying to the vessel men at large is that the rules, when adopted, will have the force of a law promulgated by the United States, and any violation of them will subject the guilty party to a very severe fine. Something of this sort has been wanted for years, as some of the railroad bridges have not been operated to the entire satisfaction of the vessel masters. As the rules proposed offer this relief they will be heartily seconded, in all probability, by the vesselmen, especially as they do not impose any hardship upon the railroads and do not deprive the latter of any of their rights.

EARLY SAILING ON LAKE SUPERIOR.

The story of the first steamboat ride on Lake Superior on the Independence, was told by Lewis Marvill, of Parkerville, St. Joseph county, Mich., in an article appearing in the Ontonagon County Miner of April 8, 1882. The narrative is an interesting one, recalling as it does the time before the building of the ship canal, when Lake Superior was practically an unknown quantity, and when what few craft plying its waters were transported overland to the head of the rapids. There are a few of the oldest inhabitants who remember the old portage at the "Soo," but their number is rapidly diminishing. In the article referring to the trip by steamer, Mr. Marvill says:

"My memory carries me back to the spring of 1845, or more than one-third of a century, and I have a vivid recollection of standing on Dorr & Webb's dock in Detroit, early in the spring, watching the process of transforming a little tub of a sloop, of about fifteen tons, into a fore-and-after, called the Ocean. My funds being rather low I determined to ship if I could and ship I did. We took in a cargo of fish for Sandusky and Milan, Ohio, and in due time sailed for those ports, and returned without any mishap. We then received orders to fit up for Lake Superior, which we accordingly did, but I being slightly indisposed when we got ready, I could not proceed with the vessel, which sailed without me.

"Some time in June, the same firm that owned the Ocean, bought and fitted up the topsail schooner Merchant, of about seventy-five tons, Capt. John Watson, for the same trade, i. e., Lake Superior, and I being determined to visit that famous lake, shipped on her, with the understanding that I might join my own ship (the Ocean) at the Sault if I felt so disposed. In due time we took on board all the necessary materials for taking both vessels over the rapids, i. e., the Ocean and Merchant, and reached the Sault, where we found the Ocean waiting for us. We fell to and jerked her over in short order, and then tackled the larger one, the Merchant. They were taken over on rollers the same way as buildings are sometimes moved. When we had her about half way across, word came that a steamer had just arrived from Chicago, with all the rigging on board, to be taken over the rapids. A few days after a misunderstanding arose among the crew of the Merchant, and a part of them quit and left her. Hearing that they were in want of a porter on the newly arrived steamer Independence, then lying at McKnight's dock getting ready to be hauled over, I applied and got the berth of porter and immediately began my duties as such. Everything being in readiness the ship was hauled out of the water, and began its transit across the neck of land forming the rapids. No mishap occurring, the process of hauling progressed slowly but surely, and in about seven weeks we were again launched in the river at the head of the falls. In the meantime the schooner Napoleon, of about 150 tons, was being put together (her whole works having been got out and shipped there ready) and she was launched a short time before the Independence, and so was the Merchant, she having stuck in the process of launching, which caused considerable delay. By this time it had got to be quite late in the fall and it began to be feared that we would not be able to make the trip before we were froze in.

"But finally we got away with a crew of fourteen men and steamed up the lake. The first place we touched at was Copper Harbor or Fort Wilkins (no such place as Marquette then being thought of), where we found a small garrison and two or three log huts. The next in order was Eagle Harbor, where there were a few prospectors, and then on to Eagle river, where we discharged the most of our cargo, but before we could throw off some fifty kegs of powder the wind raised from the northwest and kicked up such a sea that we had to weigh anchor and leave. We shaped our course for La Point, but made very poor headway, the wind being almost ahead. We, however, persevered till we got within sight of the Apostle islands, when the wind freshened into a gale and we had to turn about and run before it and make for the lee of Keweenaw point, the nearest harbor that we dare enter with safety. In the meantime the seas got running so high that it tossed our little steamer like a shell and rolled so heavy that stoves broke loose from their moorings and tumbled all over the floor. When it is remembered that it was not generally known among passengers and crew that we had fifty kegs of powder aboard it made rather lively work for us straightening things up. We succeeded in reaching our objective point in safety, where we cast anchor and laid by for three or four days, waiting for weather, repairing and laying in a stock of wood, which we had to chop and take off in our yawl—rather slow but sure work. We again set sail, and this time having favorable weather, we succeeded in reaching Eagle river, where we bid good-by to our dangerous cargo (powder) ,and where some of us strolled up to the Cliff mine and there saw the first stamp mill (rather a primitive one) in operation in that now famous region. Returning on board we again steamed up the lake to La Point, our final destination (no such place as Ontonagon then being thought of), which we reached in safety, and gave the natives a dreadful scare with the appearance of our craft, and the noise of our steam whistle.

"Our trip up the lake being now accomplished we started on our return to the Sault, which we reached in safety. The season being now far advanced we immediately proceeded to dismantle the steamer and laid her up for the winter in company with the following named craft, which then constituted the available fleet of the Great Lakes. The Ocean, about fifteen tons; the Chippewa, about twenty tons; the Algonquin, about thirty tons; the Swallow, about forty tons; the Merchant, about seventy-five tons; the Napoleon, about 150 tons, and the Independence, about 365 tons, the first steamer that ever ploughed Lake Superior. Thus ended that memorable first trip by steam to the mining regions. We found below the falls the steamer Baltimore, which was either hauled over in the winter or early spring. The Napoleon was also fitted up the next summer with engines."

WHO INVENTED THE COMPASS?

It has been proposed by certain Italian journals to celebrate next year the sixth century of the mariner's compass. This supposes the truth of the tradition that ascribes the invention of the compass in its present form to an Italian named Flavo Gioia, a resident of Amalfi, near Naples. An article denying the truth of this tradition and asserting that we are nearer the ninth than the sixth century of the compass is contributed by Father Bertelli to the "Unita Cattolica" (Florence). The following paragraphs are translated from an abstract in "Cosmos" (Paris, June 8). Says Father Bertelli:

"The Italians certainly introduced from China the use of the valuable directive property of the magnetized needle. In all probability we owe this discovery to the Amalfitans, but toward the tenth century, not at the beginning of the fourteenth. We owe also to them the improvement of the rough Chinese instrument, which consisted of a magnetized needle floating on the water in a vessel (in Italian, bussolo, whence the French name Boussole.) These essential improvements are as follows: The introduction of the pivot, the division of the limb into degrees, and the application of the "rose of the winds" to the needle itself. The compass thus perfected became a new instrument, adapted to the navigation of the high seas.

"These arguments and others like them * * * show the inadmissibility of the legend that places the invention of the compass at the beginning of the fourteenth century. This legend arose in the sixteenth century after the great services rendered by the compass to Columbus. But because there were no positive data on the subject, recourse was had at once to arbitrary conjectures, not only regarding the date (1300-1302-1310), but also regarding the name of the discoverer. The latter was called at first simply Flavo or Giovanni; afterwards the name of Gira or Goja was added, and finally he was said to be Flavio Giola, a citizen of Amalfi, or, as some maintain, of Positano, in the same republic. All this was affirmed without proof, and so, with no serious discussion, arose and spread the tradition of Flavio Gioia, inventor of the compass, in 1302.

So it is not without reason that the oldest and best informed authors have held to the primitive tradition, which attributed the use of the compass to the navigators of the ancient republic of Amalfi. The reason why these writers confine themselves in such a vague general indication is probably the following:

"This invention, like so many others, is not the result of a single brilliant idea, but the final outcome of numerous theoretical and practical researches, made by several persons during a longer or shorter period of time. This is what seems to have taken place in the case of the compass, after its introduction into the Mediterranean, up to the formation of the first marine charts furnished with the improvements indicated above. For the adoption of these a century was none too long, and consequently we cannot attribute them to a single man.

But at least may not the author of the final improvements have lived at the opening of the fourteenth century? To settle this question, the most careful researches have been made, both in the numerous Amalfitan manucripts of the epoch collected and published by M. Matteo Camera, of Amalfi, and in the Angevin parchments of the state archives, and of the monasteries of Cave and Mont Cassin. Now, among the numerous Amalfitans who are named therein, there is no one whose name has any resemblance to those mentioned above; moreover, there is not even any mention of the compass in the inventories of vessels. As to the existence of a Gioia family in these regions in the seventeenth century, that scarcely proves that a Flavio Gioia invented the compass in 1302. From what I have stated, I conclude that if we wish the (approximate) centenary to be appreciated by science, we should call it the 'ninth centenary of the Amalfitan compass.' "

THE PRODUCTION OF PIG IRON.

The Bulletin, of the American Iron and Steel Association, says.

"The American Iron and Steel Association has received from the manufacturers complete statistics of the production of all kinds of pig iron in the United States in 1901; also complete statistics of the stocks of pig iron which were on hand and for sale on December 31, 1901. The total production of pig iron in 1901 was 15,878,354 gross tons, against 13,789,242 tons in 1900, 13,620,703 tons in 1899, 11,773,934 tons in 1898, and 9,652,680 tons in 1897.

"The increase in production in the first half of 1901 over the second half of 1900 was 1,527,910 tons, and the increase in production in the second half of 1901 over the first half of 1901 was 529,128 tons. The total increase in 1901 over 1900 was 2,089,112 tons. This is a larger increase than the boom year 1899 showed over the year 1898.

"The production of Bessemer pig iron in 1901 was 9,596,793 tons, against 7,943,452 tons in 1900.

"The production of basic pig iron in 1901 was 1,448,850 tons, against 1,072,376 tons in 1900.

"The production of spiegeleisen and ferromanganese in 1901 was 291,461 tons, against 255,977 tons in 1900.

"The production of charcoal pig iron in 1901 was 360,147 tons, against 339,874 tons in 1900.

"The production of mixed charcoal and coke pig iron in 1901 was 23,294 tons, against 44,608 tons in 1900.

"Our statistics of stocks of unsold pig iron do not include pig iron made by the owners of rolling mills or steel works for their own use, but only pig iron made for sale and which has not been sold. These stocks of pig iron which were unsold in the hands of manufacturers, or which were under their control at the close of 1901, and were not intended for their own consumption, amounted to only 70,647 tons, against 442,370 tons, at the close of 1900, and 372,560 tons on June 30, 1901.

"The American Pig Iron Storage Warrant Co. held in its yards on December 31, 1901, 3,000 gross tons of pig iron, of which 2,400 were coke and 600 tons were charcoal iron. None of this iron was controlled by the makers. Adding this 3,000 tons to the 70,647 tons of unsold stocks above mentioned, we have 73,647 tons of pig iron which were on the market at the close of 1901.

"The whole number of furnaces in blast on December 31, 1901, was 266, against 232 on December 31, 1900, and 259 on June 30, 1901."

CUYAHOGA RIVER BRIDGES.

We have received from Maj. Dan C. Kingman, Corps of Engineers, U. S. A., stationed at Cleveland, the following circular letter:

THE MARINE RECORD, Cleveland, O.

Section 5 of the River and Harbor Act of Congress of August 18, 1894, authorizes the Secretary of War to make such rules and regulations for the operation of drawbridges across the navigable rivers and other waters of the United States as the public interests may require, and these rules when published have the force of law.

With a view to preparing a set of rules to govern the opening of drawbridges across the Cuyahoga river, and its connecting waters, which form a part of the harbor of Cleveland, O., the Secretary of War has authorized me to hold a public meeting at which all parties at interest may have an opportunity to be heard. Such a hearing will accordingly be held in the library of the Chamber of Commerce, in the City of Cleveland, Ohio, at 10 o'clock a. m., standard time, on Friday, the 21st day of February, 1902.

In order to form a basis of discussion, I have prepared a set of rules a copy of which is herewith inclosed), and I should be very glad to receive from you an expression of opinion in regard to these rules. The full benefit of any suggestions that you may desire to make would best be secured by putting them in writing, to be read at the time of the hearing. This suggestion is not intended to be a bar in any way, however, to a full and free discussion of the matter.

In the case the rules, as they now stand, appear to you to be satisfactory and sufficient, an expression from you in writing to this effect would be useful and valuable to me.

Without going into the full details of the regulations we quote the call on the subject:

The River and Harbor Act of August 18, 1894, contains the following section:

"Section 5. That it shall be the duty of all persons owning, operating, and tending the drawbridges now built, or which may hereafter be built across the navigable rivers and other waters of the United States, to open, or cause to be opened, the draws of such bridges under such rules and regulations as in the opinion of the Secretary of War the public interests require to govern the opening of drawbridges for the passage of vessels and other water crafts, and such rules and regulations, when so made and published, shall have the force of law. Every such person who shall willfully fail or refuse to open, or cause to be opened, the draw of any such bridge for the passage of a boat or boats, or who shall unreasonably delay the opening of said draw after reasonable signal shall have been given, as provided in such regulations, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not more than two thousand nor less than one thousand dollars, or by imprisonment (in the case of a natural person) for not exceeding one year, or by both such fine and imprisonment, in the discretion of the court; Provided that the proper action to enforce the provisions of this section may be commenced before any commissioner, judge, or court of the United States, and such commissioner, judge or court shall proceed in respect thereto as authorized by law in case of crimes against the United States: Provided further, That whenever in the opinion of the Secretary of War, the public interests require it, he may make rules and regulations to govern the opening of drawbridges for the passage of vessels and other water crafts, and such rules and regulations when so made and published, shall have the force of law, and any violations thereof shall be punished as hereinbefore provided.

A REMARKABLE STREAM.

One of the most remarkable streams in the United States is Deschutes river of central Oregon. Almost all rivers have wide extremes in the volume of their flow, running at flood in the spring and low or even dry in the summer months. But Deschutes river widely differs from this rule, and is notable for its remarkably steady flow throughout the entire year. Measurements taken over a series of years by the United States Geological Survey to ascertain the amount of its flow have shown that the river discharges an almost uniform volume of about 6,000 cubic feet per second, and that the spring and winter flow is very little more than this, and the summer very little less. An explanation of the strange behavior of this river is sought in the character of the country through which it and its tributaries flow. The whole region in former ages was widely overrun by a succession of great lava flows which are found to be separated by others layers of sand and gravel. It is thought that the rain instead of rushing at once to the streams, sinks into the rich and porous soil, into which the surface of the lava has disintegrated, and gradually percolating down to and into the rock layers, slowly flows along them to the deep canyons, which the streams have cut in the lavas. Thus the horizontal rock layers act as great storage reservoirs, and keep feeding a constant and steady supply of water to the streams.

This quality of steadiness of flow is of the greatest value to Deschutes river, and will make its water powers, of which a number are notable, and its water supply much sought after when enterprise and population are ready to use them.

NEW LIFE PRESERVER.

Lorenzo Getna, chief officer of the Italian ship Narcissus, now discharging a cargo of marble from Genoa at San Francisco, is the inventor of an ingenious life-preserver. The device is not only calculated to save a life, but to enable one to reach shore or a place of safety by means of a small propeller operated by the hands. Genta's invention is an improvement upon a similar device recently patented by him in Europe, and which was successfully tested some months ago at Buenos Ayres in the presence of 7,000 people. It is in the form of a half-boat, or that part forward of the beam, and is attached to the back of a person's head, shoulders and body, leaving the arms free. In the water the occupant lies prostrate upon his back, sustained on the surface by the several air-tight compartments composing the life-preserver. A propeller beneath the body can, it is claimed, be operated easily by means of a lever, and produce a speed of three miles an hour. The inventor intends, upon his return to Europe, to cross the English channel in order to show the excellence of his life-preserver. It has a weight of fifteen pounds, and canvas and aluminum are used in its construction.

THE Joseph Dixon Crucible Co., Jersey City, N. J., give interesting information concerning the protective painting of the Union railroad bridge, which crosses the Monongahela river at Pittsburg (Rankin), Pa. The associate engineers were Messrs. Emil Swenson, designer and engineer of construction, and William H. Smith, chief engineer, Carnegie Steel Co. The total weight of the bridge is 5,135 tons, and it has a total length of 2,328 feet. Designed for carrying molten metal from the Carrie furnace to the steel mill and raw material to the furnaces, this notable steel structure is subjected to heat from the molten metal, sulphur fumes from locomotives and river steamers, also from the adjoining furnaces and steel mills. No other steel bridge in all the world is exposed to so many and severe destructive agencies. The best metal preservative was necessary, and the eminent engineers selected for its protection Dixon's Silica-Graphite Paint, as manufactured by the Joseph Dixon Crucible Co.

WINTER MOORINGS.

A 32-page booklet showing where about 2,000 vessels are laid up for the winter. It gives steamers, schooners and barges and a list of tugs as well as a list of the vessels which were lost last season and is quite reliable, being taken from correspondence at the various lake ports. Copies sent by mail prepaid on receipt of 25c. The MARINE RECORD Publishing Co., Western Reserve Bldg., Cleveland, Ohio.

ADVANCE IN SCIENCE.

Sir William Preece, in a recent address before the Society of Arts, enumerates the great scientific discoveries of the nineteenth century to be as follows:

The principle of evolution.

The atomic structure of matter.

The existence of the ether and the undulatory theory of light.

The principles of electro-magnetic induction and electrolysis.

The principle of the conservation of energy.

These he proceeds to discuss at length, showing their influence upon what we may expect to follow and supplement them.

In the course of evolution, we may expect selective modification to be influenced by the mainsprings which are acting most powerfully; the struggle for power, the race for individual wealth, the pursuit of knowledge, the combat with disease, the advance in comfort of living; and these forces may be expected to act in the future as they have in the past.

The study of the atomic constitution of matter may lead to the discovery of many new elements, or, possibly, to the revelation to the one fundamental element of which all others are but varied manifestations.

The existence of the ether is still inexplicable in its mechanical structure, although its reality is even more fully accepted than ever. It offers no resistance to wave motion, and in it energy is not dissipated away into heat, as in the undulations and vibrations of matter. Still, no final theory of its structure has been produced, and that problem still awaits its solution in the twentieth century.

Electric-magnetic induction is only beginning to unfold its possibilities The communication of energy without the use of metallic or other material conductors is within sight, and in the form of space telegraphy has been partly realized. Electrical decomposition may be followed by recomposition and the artificial synthesis of organic compounds become commercially and wholly possible. With all these comes the principle of the conservation of energy uniting the action of force, motion and matter in ever-changing relations, but always with an unchanging sum total.—Ex.

THERE is a harmony between Germany's naval progress and her growth in merchant marine, which is regarded in England with rising apprehension. It is pointed out by a writer in the London Graphic that in all classes of merchant ships of 10,000 tons or more, England is behind her continental rival. "Of such vessels in 1900 England had 20 and Germany had 21, but at the close of 1901 England had 21 to Germany's 23. "In ships of 6,000 to 10,000 tons." says the writer mentioned above, "England is a long way ahead, but the trade of the world is tending to the employment of great dimensions and displacements, and it certainly looks as though we were being left. With a fleet of these large ships it is perfectly clear that Germany would be able without any difficulty to move two army corps by sea."

LETTERS AT DETROIT MARINE POST OFFICE

JANUARY 15, 1902.

To get any of these letters, addresses or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of his list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

Cole W H, Merida
Depke O J.
Foster D M, Hiawatha
Gilder John, G G Hadley
Hinman MrsE Hiawatha
Knight Frank, Our Son
Kinyoun Master, Perry
Lewis Charley, Venus
Lavell J J, Sophia Minch
McBride J A, Alfred Krupp
McLean H, Smith & Post
Northcott GH, WB Morley
Palmer Edw, Sitka
O'Donnell J, Memmae
Owen Jas
Parkins G A
Raymond Jas, G B Owen
Sanford Orlando H
Stevens W, Gen O M Poe
Taylor AB, Northern Queen
Trent F W, Geo Nester
Yensen P, care of Harvey H. Brown.
Bad Boy, Owner of St'm'r
Coleman J H, Penobscot
Knox W S, City of Bangor
Skulkoland Thos, Snook
Schlessman Geo.
Williams Jno, Merrimac

F. B. DICKERSON, P. M.

FLOTSAM, JETSAM AND LAGAN.

The passenger steamer Bon Ami, of the White Line Transportation Co., is making her regular north shore trips on Lake Superior, with the thermometer below zero.

Wrecking Master H. W. Baker, of Detroit, has purchased from O. W. Blodgett, of Bay City, the steamer Mark Hopkins, which went ashore on Long Point, Lake Erie, last November. The price paid is not given out. The steamer went ashore about five or six miles west of Long Point. While Capt. Baker realizes that he has a difficult job in getting the steamer again afloat, he feels very confident of success. Tugs were working on the Hopkins for several days last fall, but were unable to get her off. The new owner of the Hopkins has not yet decided what he will do with his property after he gets the steamer afloat.

It is learned that a stock company is about to be formed in Toledo for the purpose of operating a steamer between that city and Sandusky and the Islands. The plans of the steamer to be built are at the office of Mr. Bashore, and show that the boat will be up to date in every respect. Placing a steamer on this route is a project that has been talked of for several years. Her dimensions will be: Length over all, 175 feet; beam, 32 feet; depth, 14 feet. She will have a steel hull and will be fitted with two triple expansion engines, which are expected to develop a speed of from 18 to 24 miles an hour. There will be several state rooms, and the cabins will be finished with mahogany throughout.

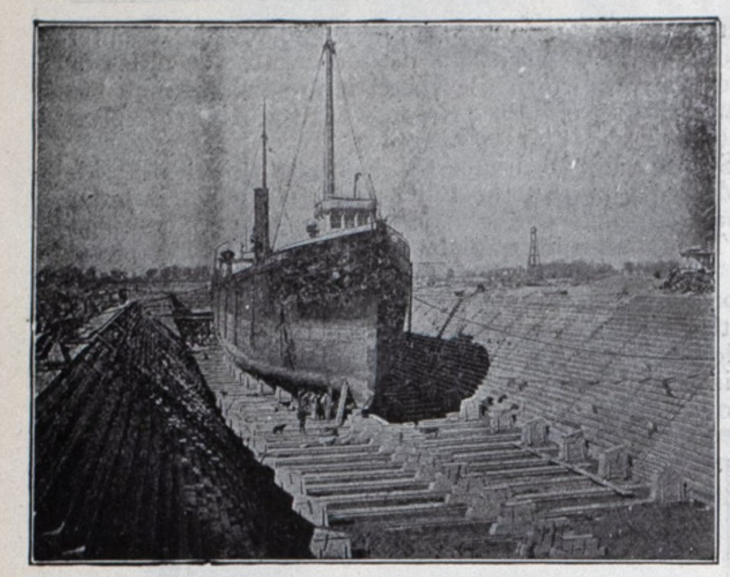
A HINDRANCE to industrial growth, second in importance to that of the demand of the war-chests, is the lack of coal. All the coal used on the railroads and in the factories is shipped from other countries, and Italy's trade balance is reduced each year by the full amount of her fuel bill. This not only has a most unfavorable effect on her balance of trade, but is means that the cost of fuel in Italy is very much higher than is the cost in any of the countries with which she must compete industrially. At Italian seaports the price of coal ranges from $7 to $10 a ton. In Milan manufacturers pay $12 a ton for coal for which German manufacturers pay $6, which the English manufacturer can get for $4, and which is laid down at many factories in the United States at $2.50 a ton.—From "The American 'Commercial Invasion' of Europe," by Frank A. Vanderlip, in the February Scribner's.

The Navy Department will make a trial of a new ship log and will probably place the mechanism on board one of the torpedo boats, says the Army and Navy Register. The log is of the Nicholson design and is in extensive use on the steamers which ply the Great Lakes. It takes the place of the system of towing a heavy float or propelling wheel on a line, and is said to operate without regard to the state of the weather or the condition of the sea. Naval officers who have examined the device are very favorably impressed with it as offering an automatic means of getting and keeping an authentic record of the speed of the ship. The only attention required by the log is the winding of a clock and daily changes of the cylinder record. The clock placed at the top of a light frame works in conjunction with the indicator and regulates the counter and record drum. One of the dials indicates the miles or knots per hour at which the vessel is moving through the water at the time of observation.—Marine Journal, New York.

The Sea & Lake Insurance Co. has paid Goulder, Holding & Masten $5,059.04, the full amount for which a judgment was awarded a few days ago in Judge Strimple's court. The Hennepin was the property of the Manistee Transit Co. for whom Goulder, Holding & Masten are the attorneys. She was burned off Buffalo a year ago, and as the insurance company refused to pay the loss the suit followed, with the judgment spoken of as the result. There is another suit now pending between the same parties over the same fire, which amounts to $40,000.

Government Proposals.

TREASURY DEPARTMENT, U. S. Life-Saving Service, Washington, D. C., January 20th, 1902. Sealed proposals will be received at this office until 2 o'clock p. m., of Tuesday, February 4, 1902, and then publicly opened, for the construction of foundations, retaining walls, etc., for a life-saving station at Buffalo, New York. Specifications and drawings, forms of proposal, etc., can be obtained upon application to the Superintendents of Construction of Life-Saving Stations, 17 State Street, New York City; to the Superintendent of the 10th Life-Saving District, Custom House, Buffalo, New York; to Assistant Inspector 10th and 11th Life-Saving Districts, Room 204 Postoffice Building, Detroit, Michigan; to the Keeper of the Cleveland Life-Saving Station, Cleveland, Ohio, or to this office. S. I. Kimball, General Superintendent. 4.



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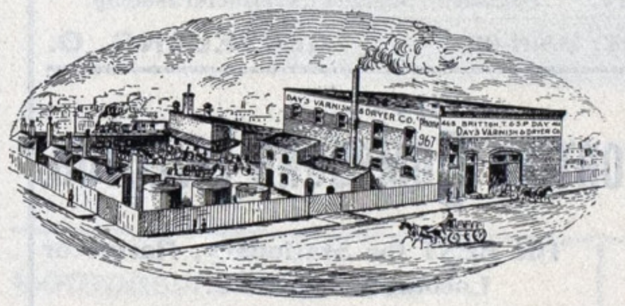

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